



VHF FM Marine Transceiver

# HX290

## SERVICE MANUAL



# Specifications

## General

Frequency Ranges:	TX: 156.025 MHz - 157.425 MHz RX: 156.050 MHz - 163.275 MHz
Channel Spacing:	25 kHz
Frequency Stability:	±10 ppm (−4 °F to +140 °F [−20 °C to +60 °C])
Emission Type:	16K0G3E
Antenna Impedance:	50 Ω
Supply Voltage:	7.4V DC, Negative Ground (Battery Terminal)
Current Consumption:	320 mA (Receive, Typical at AF MAX.) 50 mA (Standby) 1.6 A / 0.7 A (TX: 5 W / 1W)
Operating Temperature:	−4 °F to +140 °F (−20 °C to +60 °C)
Battery Type and Capacity:	Lithium-Ion, 1170 mAh
Waterproof Rating:	JIS-8 / IPX8 1.5 m (about 5Ft) for 30 minutes
Case Size (W x H x D):	2.24" x 5.24" x 1.73" (57 x 133 x 44 mm) (w/o knob & antenna)
Weight (Approx.):	10.9 oz (310 g) (w/FNB-110LI, Belt Clip, & Antenna)

## Transmitter

RF Power Output:	5 W / 1 W (@7.4 V)
Modulation Type:	Variable Reactance
Maximum Deviation:	±5 kHz
Spurious Emission:	−75 dBc typical
Microphone Impedance:	2 kΩ

## Receiver

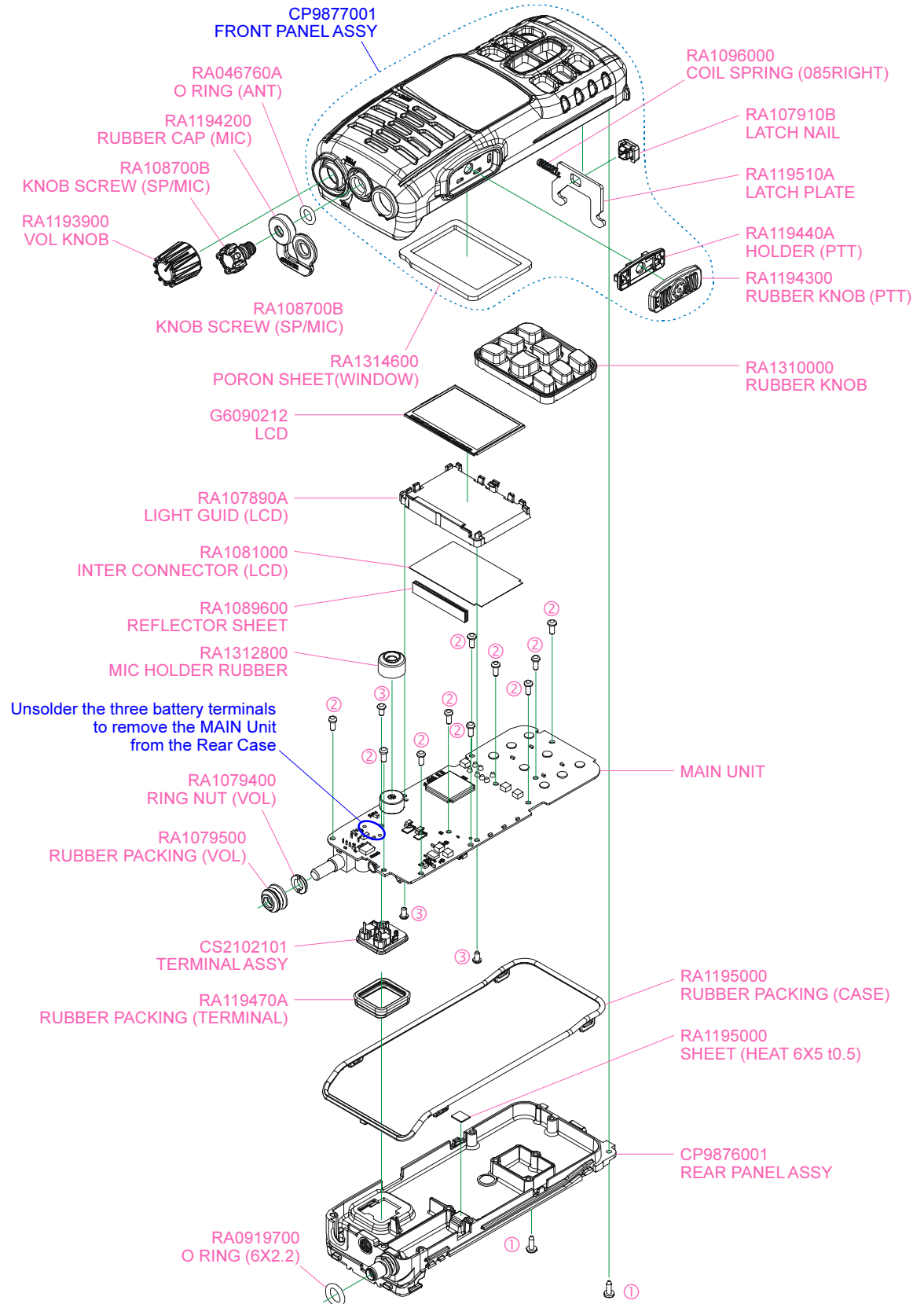
Circuit Type:	Double-Conversion Superheterodyne
Intermediate Frequencies:	1st: 21.7 MHz, 2nd: 450 kHz
Adjacent Channel Selectivity:	70 dB typical
Intermodulation:	68 dB typical
Hum & Noise Ratio:	40 dB typical
Sensitivity:	0.25 μV for 12 dB SINAD
Selectivity:	25 kHz (−70 dB)
AF Output (Internal SP):	700 mW @16 Ω for 10 % THD (@7.4 V)

*Performance specifications are nominal, unless otherwise indicated, and are subject to change without notice.  
Measured in accordance with TIA/EIA-603.*

### Important Note

The **HX290** was assembled using Pb (lead) free solder, based on the RoHS specification. Only lead-free solder (Alloy Composition: Sn-3.0Ag-0.5Cu) should be used for repairs performed on this apparatus. The solder stated above utilizes the alloy composition required for compliance with the lead-free specification, and any solder with the above alloy composition may be used.

# Exploded View & Miscellaneous Parts



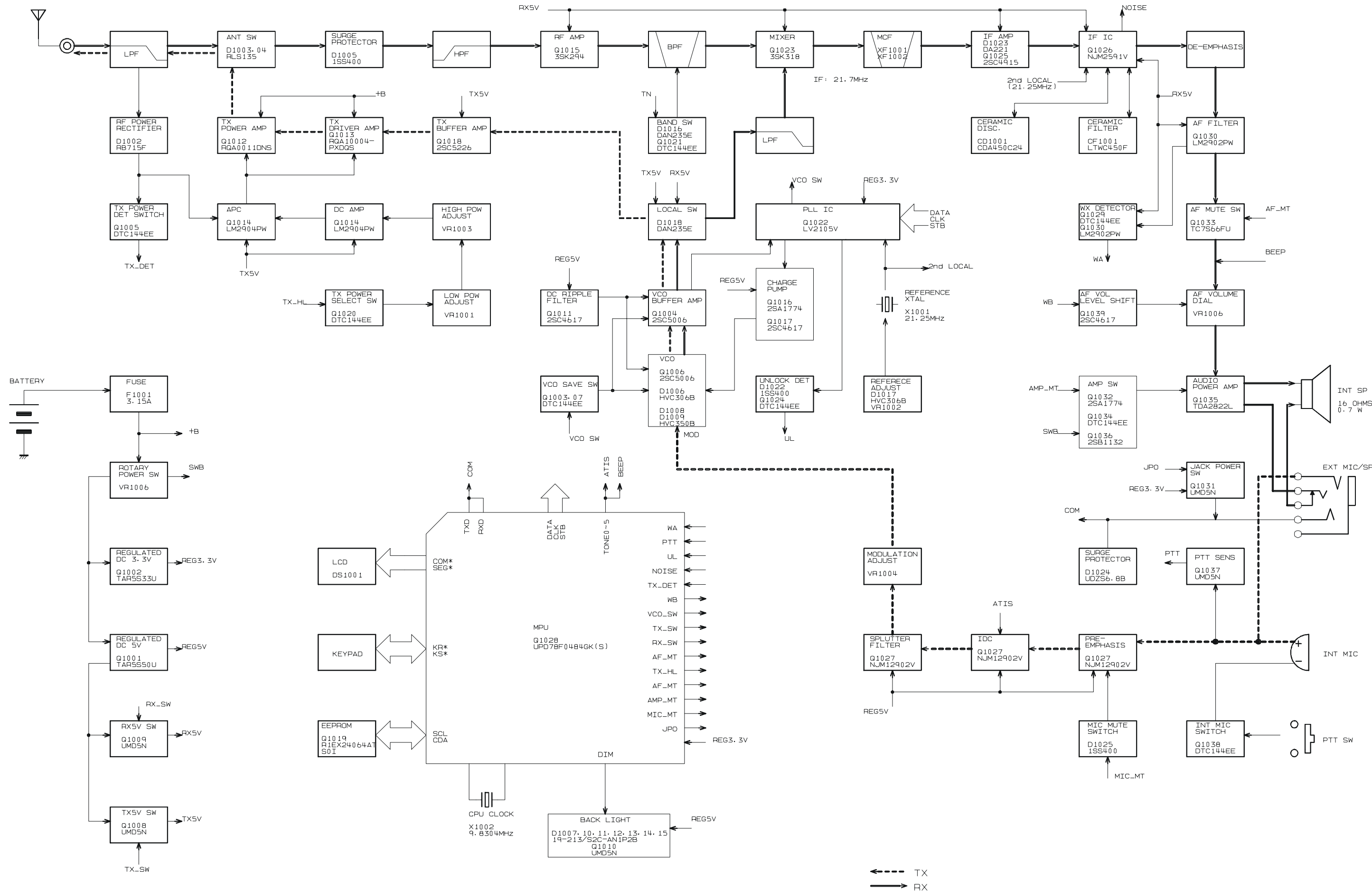
VXSTD P/N	DESCRIPTION
Q3000176	<b>CAT460</b> Antenna
AAH02X001	<b>FNB-110LI</b> Li-Ion Battery Pack
AAG85X002	<b>PA-44B</b> 120VAC Wall Charger (Type-A plug)
AAG85X003	<b>PA-44C</b> 230VAC Wall Charger (Type-C plug)
AAH68X001	<b>CD-52</b> Charger Cradle
AAH97X001	<b>CLIP-22</b> Belt Clip
S6000418	HAND STRAP

*Non-designated parts are available only  
as part of a designated assembly.*

REF.	VXSTD P/N	DESCRIPTION	QTY.
①	U24108020	BIND HEAD TAPTITE-B M2X8SUS	2
②	U44105001	PAN HEAD TAPTITE-B M2X5	10
③	U9900068	PAN HEAD TAPTITE-B M2X4NI#3	3

*Note*

# Block Diagram



*Note*

## 1. Receive Signal Path

Incoming RF from the antenna jack passes through a low-pass filter consisting of coils L1001, L1002, & L1004, capacitors C1005, C1009, C1015, C1025, & C1214, antenna switching diode **D1004 (RLS135)**, and Surge Protector diode **D1005 (1SS400)**.

Signals within the frequency range of the transceiver enter a high-pass filter consisting of coils L1012 and L1014, capacitors C1054, C1057, and C1065, then amplified by **Q1015 (3SK294)** and enter a Varactor-tuned band-pass filter consisting of coils L1021 & L1023, capacitors C1098, C1102, C1104, C1113, C1115, & C1211, and diode **D1016 (DAN235E)**, before first mixing by **Q1023 (3SK318)**.

Buffered output from the VCO is amplified by **Q1004 (2SC5006)** to provide a pure first local signal between 134.35 and 141.575 MHz for injection to the first mixer **Q1023 (3SK318)**.

The 21.7 MHz first mixer product then passes through monolithic crystal filter XF1001/XF1002 to strip away all but the desired signal, which is then amplified by **Q1025 (2SC4915)**. The amplified first IF signal is applied to FM IF subsystem IC **Q1026 (NJM2591V)**, which contains the second mixer, second local oscillator, limited amplifier, noise amplifier, and RSSI amplifier.

A second local signal is produced from the PLL reference/second local oscillator of X1001 (21.25 MHz). The 21.25 MHz reference signal is delivered to mixer section of FM IF subsystem IC **Q1026 (NJM2591V)** which produce the 450 kHz second IF mixed with the first IF signal.

The second IF then passes through the ceramic filter CF1001 to strip away unwanted mixer products, and is then applied to the limited amplifier in the FM IF subsystem IC **Q1026 (BA4116FV)**, which removes amplitude variations in the 450kHz IF, before detection of the speech by the ceramic discriminator CD1001.

## 2. Audio Amplifier

The demodulated audio signal from the **Q1026 (NJM2591V)** passes through the de-emphasis circuit, then applied to the audio filter **Q1030 (LM2902PWR)**. Then passes through the audio mute switch **Q1033 (TC7S66FU)**, the audio volume VR1006 and the audio power amplifier **Q1035 (TDA2822L)** pin 7, providing up to 700 mW of audio power to the 16-ohm loudspeaker.

## 3. Squelch Control

The squelch circuitry consists of a noise amplifier and band-pass filter and noise detector within **Q1026 (NJM2591V)**. When no carrier received, noise at the output of the detector stage in **Q1026 (NJM2591V)** is amplified and band-pass filtered by the noise amplifier section of **Q1026 (NJM2591V)** and the network between pins 7 and 8, and then rectified by detection circuit in **Q1026 (NJM2591V)**.

The resulting DC squelch control voltage is passed to pin 64 of the microprocessor **Q1028 (UPD78F0484GK)**. If no carrier is received, this signal causes pin 38 of **Q1028 (UPD78F0484GK)** to go low and pin 67 to go high. Pin 67 signals of **Q1028 (UPD78F0484GK)** to disable the supply voltage to the audio amplifier **Q1035 (TDA2822)**.

Thus, the microprocessor blocks output from the audio amplifier, and silences the receiver, while no signal is being received (and during transmission, as well).

## 4. Transmit Signal Path

The speech input from the microphone MC1001 passes through the audio amplifier **Q1027 (NJM12902V)**, which is adjusted the microphone gain. The speech signal passes through pre-emphasis circuit to **Q1027 (NJM12902V)**, which contains the IDC, and low-pass filter. Then passes through VR1004 which allows manual adjustment of the transmitter deviation level.

The filtered audio signal is applied to varactor diode **D1006 (HVC306B)**, which frequency modulates the VCO **Q1006 (2SC5006)**.

The modulated signal from the VCO **Q1006 (2SC5006)** is buffered by **Q1004 (2SC5006)**. The low-level transmit signal is then passes through the TX switching diode **D1018 (DAN235E)** to the buffer amplifier **Q1018 (2SC5226)**, driver amplifier **Q1013 (RQA0004PXDQS)**, then amplified transmit signal is applied to the final amplifier **Q1012 (RQA0011DNS)** up to 5.0 watts output power.

The transmit signal then passes through the antenna switch **D1003 (RLS135)** and is low-pass filtered to suppress harmonic spurious radiation before delivery to the antenna.

# Circuit Description

## 4-1 Automatic Transmit Power Control

Current from the final amplifier is sampled by C1012 & C1020, and R1006 & R1010, and is rectified by **D1002 (RB715F)**. The resulting DC is fed back through **Q1014 (LM2904PWR)** to the drive amplifier **Q1013 (RQA0004PXDQS)** and final amplifier **Q1012 (RQA0011DNS)**, for control of the power output.

When the microprocessor selects “High” or “Low” power levels, pin 66 of **Q1028 (UPD78F0484GK)** to go low at “High” power selected or pin 66 of **Q1028 (UPD78F0484GK)** to go high at “Low” power selected.

## 5. PLL Frequency Synthesizer

The PLL circuitry on the Main Unit consists of VCO **Q1006 (2SC5006)**, VCO buffer **Q1004 (2SC5006)**, PLL subsystem IC **Q1022 (LV2105V)**, which contains a reference divider, serial-to-parallel data latch, programmable divider, phase comparator and charge pump, and crystal X1001 which frequency stability is  $\pm 10$  ppm @  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .

While receiving, VCO **Q1006 (2SC5006)** oscillates between 134.35 and 141.575 MHz according to the transceiver version and the programmed receiving frequency. The VCO output is buffered by **Q1004 (2SC5006)**, then applied to the prescaler section of **Q1022 (LV2105V)**. There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of **Q1022 (LV2105V)**, before being sent to the programmable divider section of **Q1022 (LV2105V)**.

The data latch section of **Q1022 (LV2105V)** also receives serial dividing data from the microprocessor **Q1028 (UPD78F0484GK)**, which causes the pre-divided VCO signal to be further divided in the programmable divider section, depending upon the desired receive frequency, so as to produce a 25.0 kHz derivative of the current VCO frequency.

Meanwhile, the reference divider sections of **Q1022 (LV2105V)** divides the 21.25 MHz crystal reference from the reference oscillator section of **Q1022 (LV2105V)**, by 850 to produce the 25.0 kHz loops reference.

The 25.0 kHz signal from the programmable divider (derived from the VCO) and that derived from the reference oscillator are applied to the phase detector section of **Q1022 (LV2105V)**, which produces a pulsed output with pulse duration depending on the phase difference between the input signals.

This pulse train is filtered to DC and returned to the Varactor **D1008** and **D1009** (both **HVC350B**).

Changes in the level of the DC voltage applied to the Varactor, affecting the reference in the tank circuit of the VCO according to the phase difference between the signals derived from the VCO and the crystal reference oscillator.

The VCO is thus phase-locked to the crystal reference oscillator. The output of the VCO **Q1006 (2SC5006)** after buffering by **Q1004 (2SC5006)** is applied to the first mixer as described previously.

For transmission, the VCO **Q1006 (2SC5006)** oscillates between 156.025 and 157.425 MHz according to the model version and programmed transmit frequency. The remainder of the PLL circuitry is shared with the receiver. However, the dividing data from the microprocessor is such that the VCO frequency is at the actual transmit frequency (rather than offset for IFs, as in the receiving case). Also, the VCO is modulated by the speech audio applied to **D1006 (HVC306B)**, as described previously.

## 6. Miscellaneous Circuits

### Push-To-Talk Transmit Activation

When the PTT switch on the Main Unit is closed, pin 72 of **Q1028 (UPD78F0484GK)** goes low. This signal disables the receiver by disabling the 5 V supply bus at **Q1009 (UMD5N)** to the front-end, FM IF subsystem IC **Q1026 (NJM2591V)**.

At the same time, **Q1008 (UMD5N)** activate the transmit 5 V supply line to enable the transmitter.



The **HX290** has been carefully aligned at the factory for the specified performance across the marine band.

Realignment should therefore not be necessary except in the event of a component failure.

All component replacement and service should be performed only by an authorized STANDARD HORIZON representative, or the warranty policy may be voided.

The following procedures cover the sometimes critical and tedious adjustments that are not normally required once the transceiver has left the factory. However, if damage occurs and some parts are replaced, realignment may be required. If a sudden problem occurs during normal operation, it is likely due to component failure; realignment should not be done until after the faulty component has been replaced.

We recommend that servicing be performed only by authorized STANDARD HORIZON service technicians who are experienced with the circuitry and fully equipped for repair and alignment. Therefore, if a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Authorized STANDARD HORIZON service technicians realign all circuits and make complete performance checks to ensure compliance with factory specifications after replacing any faulty components. Those who do undertake any of the following alignments are cautioned to proceed at their own risk.

Problems caused by unauthorized attempts at realignment are not covered by the warranty policy. Also, STANDARD HORIZON must reserve the right to change circuits and alignment procedures in the interest of improved performance, without notifying owners. Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty components replaced, and the need for realignment determined to be absolutely necessary. The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy. While most steps do not require all of the equipment listed, the interactions of some adjustments may require that more complex adjustments be performed afterwards. Do not attempt to perform only a single step unless it is clearly isolated electrically from all other steps. Have all test equipment ready before beginning, and follow all of the steps in a section in the order presented.

## Required Test Equipment

- ☐ RF Signal Generator with calibrated output level at 200 MHz
- ☐ Frequency Counter: >0.1 ppm accuracy at 200 MHz
- ☐ AF Signal Generator
- ☐ Deviation Meter (linear detector)
- ☐ VHF Sampling Coupler
- ☐ Inline Wattmeter with 5% accuracy at 200 MHz
- ☐ 50-ohm Non-reactive Dummy Load: 10W at 200 MHz
- ☐ 7.4 VDC, 2A Regulated DC Power Supply
- ☐ IBM® PC/compatible computer with Microsoft® Windows® 2000, XP, or Vista
- ☐ Standard Horizon HX290 Service Flag Controller and CT-111 (or CT-29 + CT-97) Clone Cable.

## Alignment Preparation & Precautions

A dummy load and inline wattmeter must be connected to the main antenna jack in all procedures that call for transmission, except where specified otherwise. Correct alignment is not possible with an antenna. After completing one step, read the following step to determine whether the same test equipment will be required. If not, remove the test equipment (except dummy load and wattmeter, if connected) before proceeding.

Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20 °C and 30 °C (68 °F ~ 86 °F). When the transceiver is brought into the shop from hot or cold air it should be allowed some time for thermal equalization with the environment before alignment. If possible, alignments should be made with oscillator shields and circuit boards firmly affixed in place. Also, the test equipment must be thoroughly warmed up before beginning.

**Note:** Signal levels in dB referred to in this procedure are based on 0 dBμ = 0.5 μV(closed circuit).


# Alignment

## Before Alignment



Remove the Front Panel from the transceiver according to the following procedures:

1. Disconnect the antenna from the transceiver.
2. Remove the VOL knob, MIC/SP Screw (with Rubber Cap), and Battery Pack from the transceiver.
3. Remove the two screws which located at the bottom side on the battery compartment of the transceiver.
4. Carefully pull out the chassis from the Front Panel. Refer to the "Exploded View" on the page 4.

## Reference Frequency Adjustment

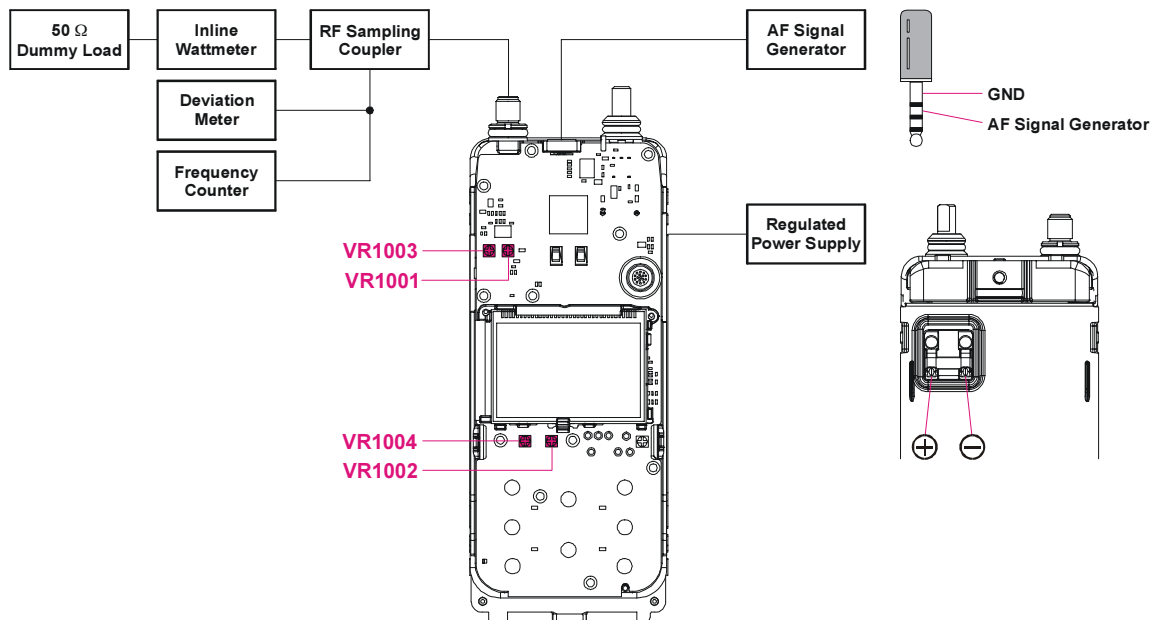
- ❑ Set up the test equipment as shown below, and set the DC Power Supply voltage to 7.4 V.
- ❑ Turn the transceiver on.
- ❑ Set the channel to CH16.
- ❑ Use the  key to set the transceiver to "LOW" power.
- ❑ With the **PTT** switch pressed, adjust **VR1002** so the Frequency Counter reading is  $156.800 \text{ MHz} \pm 100 \text{ Hz}$ .
- ❑ Release the **PTT** switch.

## Transmit Power Adjustment

- ❑ Set up the test equipment as shown below, and set the DC Power Supply voltage to 7.4 V.
- ❑ Set the channel to CH16.
- ❑ Use the  key to set the transceiver to "HI" power.
- ❑ With the **PTT** switch pressed, adjust **VR1003** so that RF output power is  $5.0 \text{ W} \pm 0.1 \text{ W}$ .
- ❑ Release the **PTT** switch, then set the transceiver to "LOW" power by pressing the  key.
- ❑ With the **PTT** switch pressed, adjust **VR1001** so that RF output power is  $0.9 \text{ W} \pm 0.1 \text{ W}$ .
- ❑ Release the **PTT** switch.

## TX Deviation Adjustment

- ❑ Set up the test equipment as shown below, and set the DC Power Supply voltage to 7.4 V.
- ❑ Set the AF Signal Generator output to 100 mVrms at 1 kHz.
- ❑ Set the channel to CH16 with "LOW" power.
- ❑ With the **PTT** switch pressed, adjust **VR1004** so that the maximum deviation is  $4.2 \text{ kHz} \pm 0.1 \text{ kHz}$ .
- ❑ Release the **PTT** switch.
- ❑ Turn the transceiver off.



**TX SECTION ALIGNMENT SETUP**

## Software Alignment

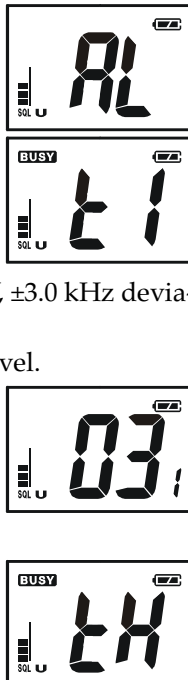
### Set up the Software Alignment Mode

- ❑ Install the HX290 Service Flag Controller Program to your computer.
- ❑ Connect the CT-111 (or CT-29 + CT-97) Clone Cable between the MIC/SP jack of the HX290 and the Serial Port of your computer.
- ❑ Execute the HX290 Service Flag Controller Program.
- ❑ Select the COM port number which is connected to the Clone Cabl (HX290).
- ❑ Press and hold in the **[RESET]** key while turning the transceiver on.
- ❑ Select "Alignment ON" Radio Button of the HX290 Service Flag Controller Program.
- ❑ Click the left mouse button on the **[SET]** button of the HX290 Service Flag Controller Program. Then turn the transceiver off.



### Squelch Adjustment

- ❑ Set up the test equipment as shown at the right, and set the DC Power Supply voltage to 7.4 V.
- ❑ Turn the transceiver on.
- ❑ Set the channel to CH16, then turn the transceiver off.
- ❑ Press and hold in the **[RESET]** key while turning the transceiver on to enter the Alignment Mode. The display will be shown the "AL".
- ❑ Press the **[SCAN/ENT]** key repeatedly until the Alignment Item "ti" is shown on the display.
- ❑ Set the RF Signal Generator output to 156.800 MHz, at a level of 0 dB $\mu$ V,  $\pm$ 3.0 kHz deviation with a 1 kHz audio tone.
- ❑ Press the **[RESET]** key to record a tight level.
- ❑ Adjust **VR1005** so that the transceiver's display becomes "031".
- ❑ Press the **[MC]** key to save the new setting.
- ❑ Press the **[SCAN/ENT]** key repeatedly until the Alignment Item "tH" is shown on the display.
- ❑ Set the RF Signal Generator output to 156.800 MHz, at a level of -8 dB $\mu$ V,  $\pm$ 3.0 kHz deviation with a 1 kHz audio tone.
- ❑ Press the **[RESET]** key to record a threshold level.
- ❑ Press and hold the **[16/9]** key for one second to save the new setting.
- ❑ Turn the transceiver off.



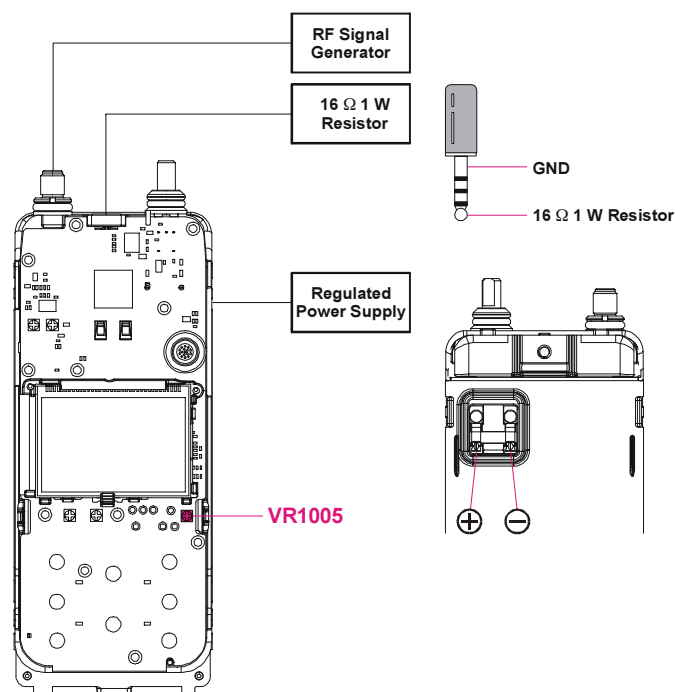
### Terminates the Software Alignment Mode

- ❑ Execute the HX290 Service Flag Controller Program again.
- ❑ Connect the CT-111 (or CT-29 + CT-97) Clone Cable between the MIC/SP jack of the HX290 and the Serial Port of your computer.
- ❑ Execute the HX290 Service Flag Controller Program.
- ❑ Select the COM port number which is connected to the Clone Cabl (HX290).
- ❑ Press and hold in the **[RESET]** key while turning the transceiver on.
- ❑ Select "Alignment OFF" Radio Button of HX290 Service Flag Controller Program.
- ❑ Click the left mouse button on the **[SET]** button of the HX290 Service Flag Controller Program.
- ❑ Turn off the transceiver. Then turn the transceiver off.



### After Alignment

- ❑ Assemble the transceiver while being carefully so that Rubber Packing does not protrude from a Front Case.
- Important Note: To ensure the radio is water proof, make sure the gasket is installed on the chassis correctly and is not pinched when inserted into the front case.*

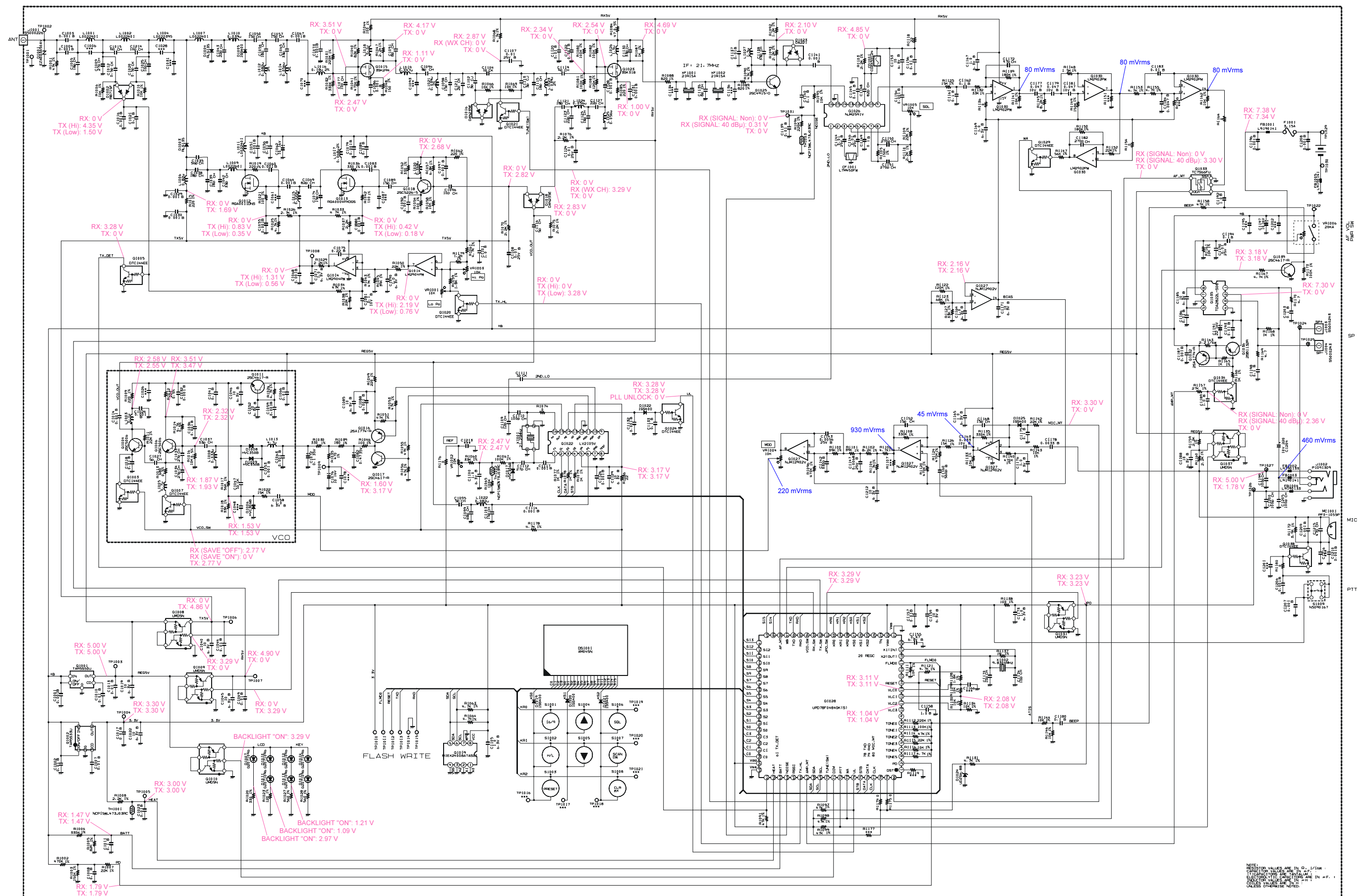


**RX SECTION ALIGNMENT SETUP**

### NOTICE

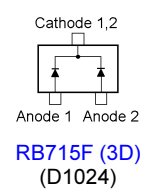
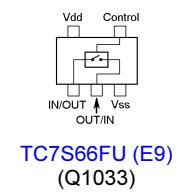
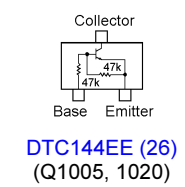
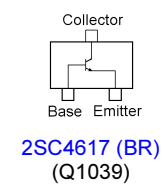
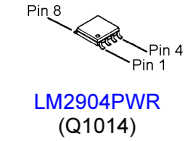
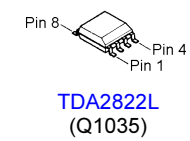
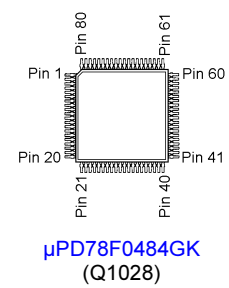
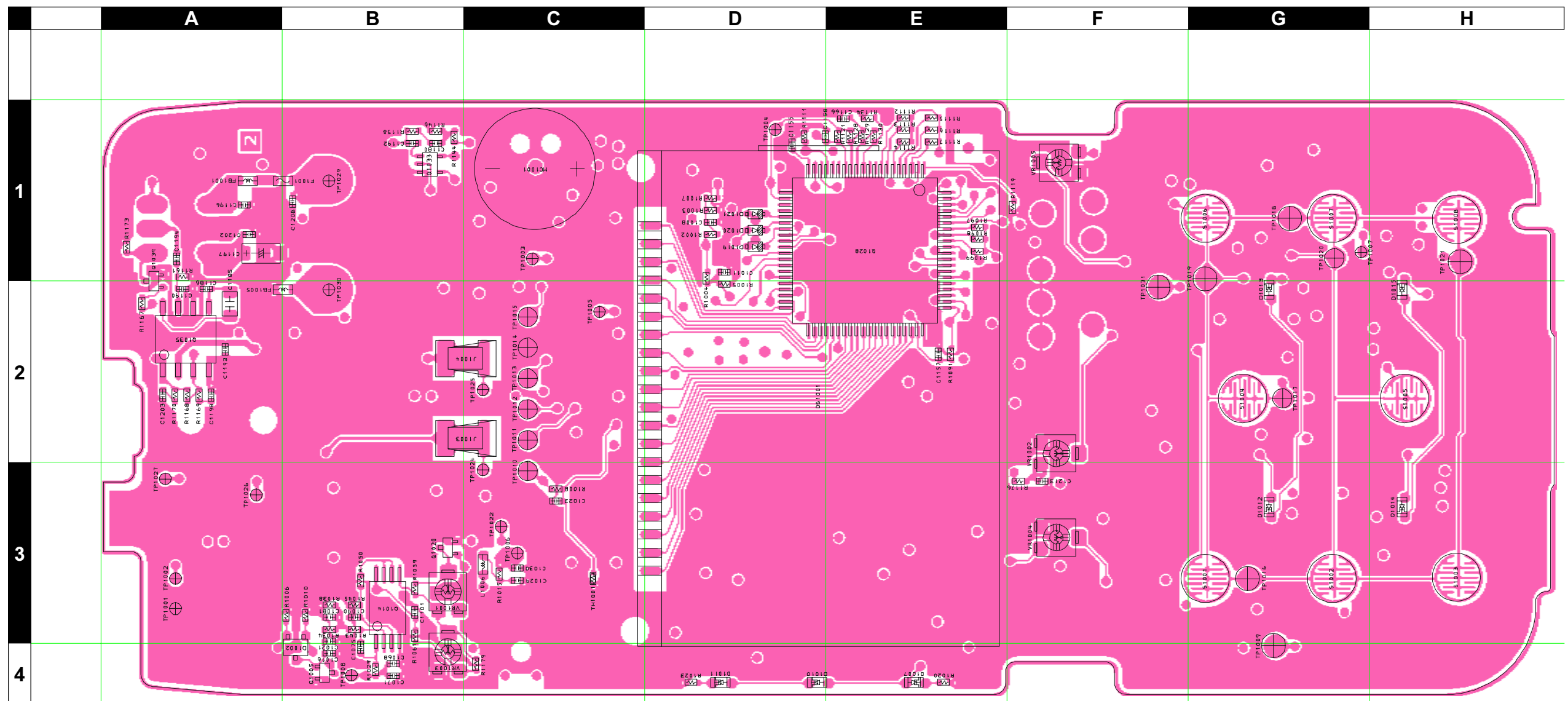
Do not touch the Alignment Item "dC".

*Note*



***MAIN Unit***

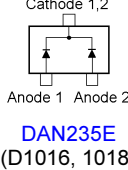
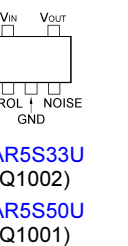
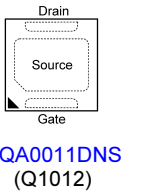
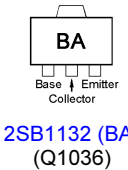
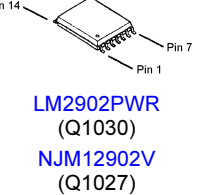
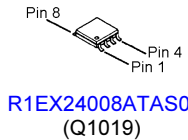
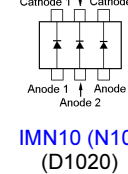
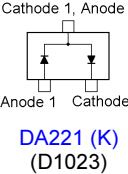
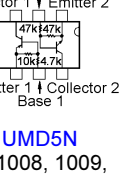
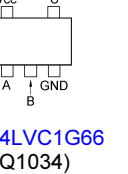
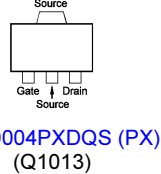
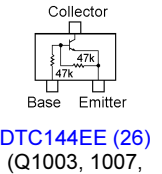
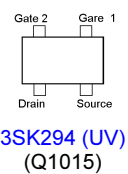
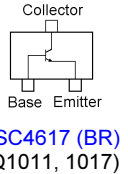
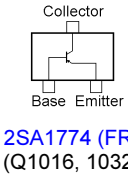
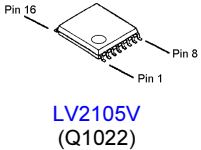
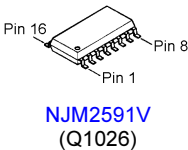
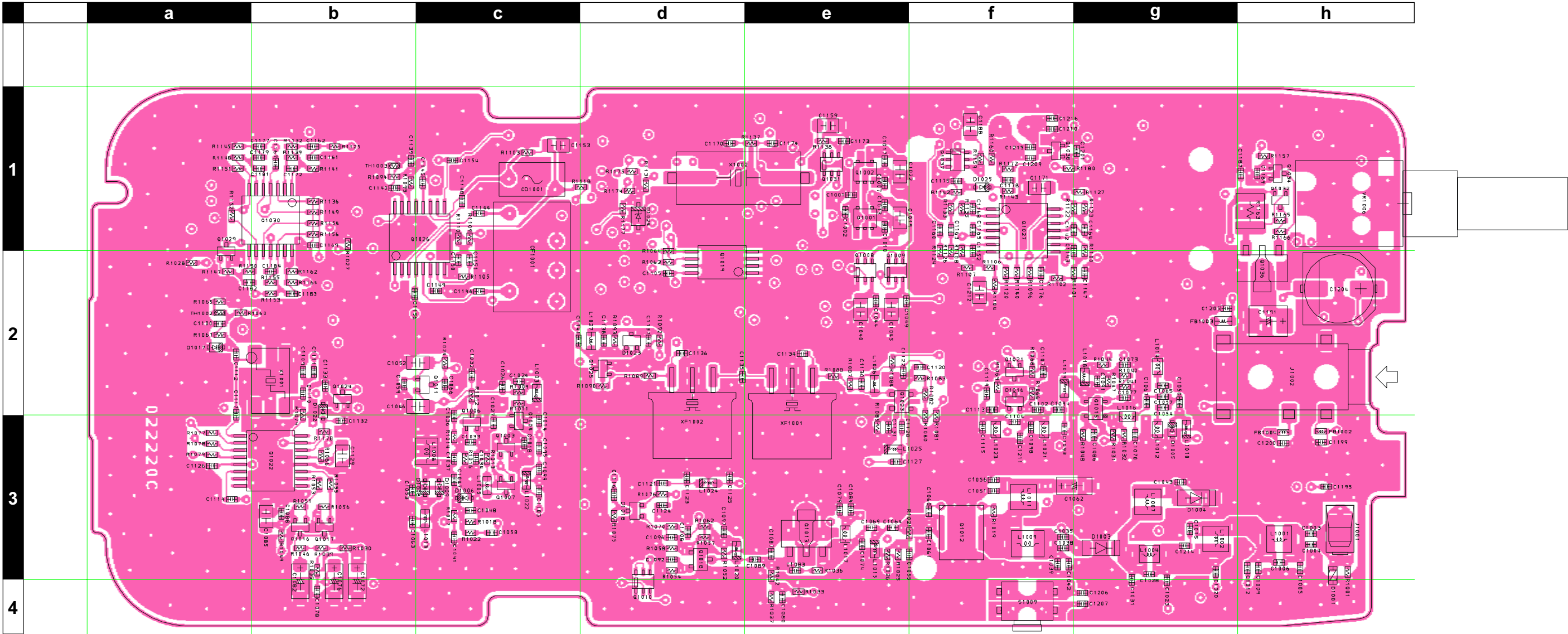
***Note***





MAIN Unit

Parts Layout (Side B)





REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY	ADR
PCB with Components						CS2101701					
Printed Circuit Board						FR0222200		1-			
					AM045N000						
C 1001	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		e1
C 1002	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e1
C 1003	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		h3
C 1004	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		h3
C 1005	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B		h3
C 1007	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e1
C 1008	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A		D1
C 1009	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B		h3
C 1010	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e1
C 1011	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A		D1
C 1012	CHIP CAP.	0.5pF	50V	CK	GRM1554C1HR50BZ01D	K22178285		1-	B		h3
C 1013	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e1
C 1014	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		c3
C 1015	CHIP CAP.	6pF	50V	CH	GRM1552C1H6R0DZ01D	K22178208		1-	B		g3
C 1016	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A		B4
C 1017	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e1
C 1018	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		c3
C 1019	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B		e1
C 1020	CHIP CAP.	0.5pF	50V	CK	GRM1554C1HR50BZ01D	K22178285		1-	B		g3
C 1021	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A		B3
C 1022	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B		e1
C 1023	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A		C3
C 1024	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		c2
C 1025	CHIP CAP.	10pF	50V	CH	GRM1552C1H100BZ01D	K22178297		1-	B		g3
C 1027	CHIP CAP.	5pF	50V	CH	GRM1552C1H5R0CZ01D	K22178207		1-	B		c3
C 1029	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A		C3
C 1030	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A		C3
C 1032	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		c2
C 1033	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B		c3
C 1034	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B		c3
C 1035	CHIP CAP.	56pF	50V	CH	GRM1552C1H560JD01D	K22178230		1-	B		f3
C 1036	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		c2
C 1037	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B		c3
C 1038	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B		f3
C 1039	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B		f3
C 1040	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B		e2
C 1041	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B		c3
C 1042	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B		f3
C 1043	CHIP CAP.	22pF	50V	CH	GRM1552C1H220JZ01D	K22178220		1-	B		g3
C 1044	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e2
C 1045	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B		e2
C 1046	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B		c2
C 1047	CHIP CAP.	1pF	50V	CK	GRM1554C1H1R0BZ01D	K22178287		1-	B		c3
C 1049	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		e2
C 1050	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B		g2
C 1051	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		f3
C 1052	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B		c2
C 1053	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		b3
C 1054	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B		g2
C 1055	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		e3
C 1056	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		f3
C 1057	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B		g2
C 1058	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B		c3
C 1059	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		b2
C 1060	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		f3
C 1062	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B		f3
C 1063	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		b3
C 1064	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		e3
C 1065	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B		g2
C 1066	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B		c2
C 1067	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		g2
C 1068	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A		B4
C 1069	CHIP CAP.	82pF	50V	CH	GRM1552C1H820JD01D	K22178234		1-	B		e3
C 1071	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A		B4
C 1072	CHIP TA.CAP.	0.1uF	35V		TEESVA1V104M8R	K78160025		1-	B		g3
C 1073	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		g2
C 1074	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B		e3
C 1075	CHIP CAP.	0.22uF	10V	B	GRM155B31A224KE18D	K22108808		1-	A		B4
C 1076	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B		b3
C 1077	CHIP CAP.	10pF	50V	CH	GRM1552C1H100BZ01D	K22178297		1-	B		g2
C 1079	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B		e3

# MAIN Unit

## Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1080	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e4
C 1081	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	B3
C 1082	CHIP TA.CAP.	0.47uF	35V		TEESVA1V474M8R	K78160029		1-	B	b3
C 1083	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1084	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	e3
C 1085	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	b3
C 1086	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g3
C 1088	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b3
C 1089	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B	e3
C 1090	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	B3
C 1091	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	g2
C 1092	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d3
C 1094	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	f2
C 1095	CHIP CAP.	5pF	50V	CH	GRM1552C1H5R0CZ01D	K22178207		1-	B	c3
C 1096	CHIP CAP.	10pF	50V	CH	GRM1552C1H100BZ01D	K22178297		1-	B	d3
C 1097	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d3
C 1098	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B	f3
C 1099	CHIP CAP.	68pF	50V	CH	GRM1552C1H680JZ01D	K22178232		1-	B	c3
C 1100	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	a2
C 1101	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	B3
C 1102	CHIP CAP.	3pF	50V	CJ	GRP1553C1H3R0CZ01E	K22178205		1-	B	f2
C 1103	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B	c3
C 1104	CHIP CAP.	1pF	50V	CK	GRM1554C1H1R0BZ01D	K22178287		1-	B	f3
C 1105	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	d2
C 1107	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f2
C 1108	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d3
C 1109	CHIP CAP.	12pF	50V	CH	GRM1552C1H120JZ01D	K22178214		1-	B	b2
C 1110	CHIP CAP.	100pF	50V	CH	GRM1552C1H101JD01D	K22178236		1-	B	b2
C 1111	CHIP CAP.	1pF	50V	CK	GRM1554C1H1R0BZ01D	K22178287		1-	B	b2
C 1112	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	a2
C 1113	CHIP CAP.	3pF	50V	CJ	GRP1553C1H3R0CZ01E	K22178205		1-	B	f2
C 1114	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a3
C 1115	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	f3
C 1116	CHIP CAP.	5pF	50V	CH	GRM1552C1H5R0CZ01D	K22178207		1-	B	d3
C 1117	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a2
C 1119	CHIP CAP.	4pF	50V	CH	GRM1552C1H4R0CZ01D	K22178206		1-	B	f2
C 1120	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f2
C 1121	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	d3
C 1122	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1123	CHIP CAP.	22pF	50V	CH	GRM1552C1H220JZ01D	K22178220		1-	B	d3
C 1124	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d3
C 1125	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	d3
C 1126	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a3
C 1127	CHIP CAP.	22pF	50V	CH	GRM1552C1H220JZ01D	K22178220		1-	B	e3
C 1128	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1129	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	b3
C 1130	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B	e2
C 1131	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1132	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b3
C 1133	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b2
C 1135	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	d2
C 1137	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d2
C 1138	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B	d2
C 1139	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b1
C 1140	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1141	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c2
C 1142	CHIP CAP.	330pF	50V	B	GRM155B11H331KA01D	K22178803		1-	B	f1
C 1143	CHIP CAP.	0.0056uF	25V	B	GRM155B11E562KA01D	K22148802		1-	B	f1
C 1144	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c1
C 1145	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c1
C 1146	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c2
C 1147	CHIP CAP.	0.0068uF	25V	B	GRM155B11E682KA01D	K22148803		1-	B	g2
C 1148	CHIP CAP.	82pF	50V	CH	GRM1552C1H820JD01D	K22178234		1-	B	c1
C 1149	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c2
C 1150	CHIP CAP.	270pF	50V	CH	GRM1552C1H271JA01D	K22179715		1-	B	c2
C 1151	CHIP CAP.	270pF	50V	CH	GRM1552C1H271JA01D	K22179715		1-	B	c2
C 1152	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B	f1
C 1153	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	c1
C 1154	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c1
C 1155	CHIP CAP.	0.47uF	6.3V	B	GRM155B30J474KE18D	K22088802		1-	A	D1
C 1156	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b2
C 1157	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	E2
C 1158	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	D1

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1159	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	e1
C 1160	CHIP CAP.	560pF	50V	B	GRM155B11H561KD01	K22178806		1-	B	f1
C 1161	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1162	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1163	CHIP CAP.	0.033uF	10V	B	GRM155B11A333KA01D	K22108803		1-	B	f1
C 1164	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	g1
C 1165	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	f1
C 1167	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	b1
C 1168	CHIP CAP.	15pF	50V	CH	GRM1552C1H150JZ01D	K22178216		1-	B	f1
C 1169	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	b1
C 1170	CHIP CAP.	10pF	50V	CH	GRM1552C1H100BZ01D	K22178297		1-	B	d1
C 1171	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	f1
C 1172	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	b1
C 1173	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	e1
C 1174	CHIP CAP.	10pF	50V	CH	GRM1552C1H100BZ01D	K22178297		1-	B	e1
C 1175	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	f1
C 1176	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	f2
C 1177	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	b1
C 1178	CHIP CAP.	0.0033uF	50V	B	GRM155B11H332KA01D	K22178815		1-	B	f1
C 1179	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	b1
C 1180	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	B1
C 1181	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	b1
C 1182	CHIP CAP.	270pF	50V	CH	GRM1552C1H271JA01D	K22179715		1-	B	a2
C 1183	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b2
C 1184	CHIP CAP.	0.0047uF	50V	B	GRM155B11H472KA01D	K22178838		1-	B	b2
C 1185	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	A	A2
C 1186	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	A2
C 1187	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h1
C 1188	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	f1
C 1189	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	h1
C 1190	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	A2
C 1191	CHIP TA.CAP.	22uF	16V		TEESVB21C226M8R	K78120028		1-	B	h2
C 1192	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	B1
C 1193	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	A2
C 1194	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	A1
C 1196	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	A1
C 1197	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	A	A1
C 1198	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	A2
C 1199	CHIP CAP.	100pF	50V	CH	GRM1552C1H101JD01D	K22178236		1-	B	h3
C 1200	CHIP CAP.	100pF	50V	CH	GRM1552C1H101JD01D	K22178236		1-	B	h3
C 1203	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	A2
C 1204	AL.ELECTRO.CAP.	220uF	10V		UUR1A221MCL6GS	K48100013		1-	B	h2
C 1205	CHIP CAP.	100pF	50V	CH	GRM1552C1H101JD01D	K22178236		1-	B	g2
C 1206	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g4
C 1207	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g4
C 1208	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	B1
C 1209	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f1
C 1210	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f1
C 1211	CHIP CAP.	2pF	50V	CK	GRM1554C1H2R0BZ01D	K22178289		1-	B	f3
C 1212	CHIP CAP.	10uF	6.3V	B	JMK212BJ106KG-T	K22080802		1-	B	f2
C 1214	CHIP CAP.	10pF	50V	CH	GRM1552C1H100BZ01D	K22178297		1-	B	g3
C 1215	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	f1
CD1001	CERAMIC DISC				CDA450C24	H7901430		1-	B	c1
CF1001	CERAMIC FILTER				LTM450FW	H3900572		1-	B	c1
D 1001	SURGE ABSORBER				EZAEG3A50AV	Q9000867		1-	B	h3
D 1002	DIODE				RB715F T106	G2070752		1-	A	B4
D 1003	DIODE				RLS135 TE-11	G2070128		1-	B	g3
D 1004	DIODE				RLS135 TE-11	G2070128		1-	B	g3
D 1005	DIODE				1SS400 TE61	G2070634		1-	B	g3
D 1006	DIODE				HVC306B TRU-E	G2070918		1-	B	c3
D 1007	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	E4
D 1008	DIODE				HVC350B-TRF-E	G2070596		1-	B	c3
D 1009	DIODE				HVC350B-TRF-E	G2070596		1-	B	c3
D 1010	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	D4
D 1011	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	D4
D 1012	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	G3
D 1013	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	G2
D 1014	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	H3
D 1015	LED				19-213/S2C-AN1P2B/3T	G2071096		1-	A	H2
D 1016	DIODE				DAN235E TL	G2070612		1-	B	f2
D 1017	DIODE				HVC306B TRU-E	G2070918		1-	B	a2
D 1018	DIODE				DAN235E TL	G2070612		1-	B	d3
D 1019	DIODE				1SS400 TE61	G2070634		1-	A	D1

## Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
D 1020	DIODE				1SS400 TE61	G2070634		1-	A	D1
D 1021	DIODE				1SS400 TE61	G2070634		1-	A	D1
D 1022	DIODE				1SS400 TE61	G2070634		1-	B	b2
D 1023	DIODE				DA221 TL	G2070178		1-	B	d2
D 1024	DIODE				UDZS TE-17 6.8B	G2070888		1-	B	d1
D 1025	DIODE				1SS400 TE61	G2070634		1-	B	f1
DS1001	LCD				AM045N	G6090212		1-	A	D2
F 1001	CHIP FUSE	3.15A			FHC16 322ADTP	Q0000118		1-	A	A1
FB1001	FERRITE BEADS				BLM18PG330SN1D	L9190141		1-	A	A1
FB1002	FERRITE BEADS				BLM15BD102SN1D	L9190133		1-	B	h3
FB1003	FERRITE BEADS				BLM18PG330SN1D	L9190141		1-	B	g2
FB1004	FERRITE BEADS				BLM15BD102SN1D	L9190133		1-	B	h3
FB1005	FERRITE BEADS				BLM18PG330SN1D	L9190141		1-	A	A2
J 1001	SHIELD FINGER				3525 3100103	S5000226		1-	B	h3
J 1002	CONNECTOR				MJC-046-C1-3.5-T	P1091309		1-	B	h2
J 1003	CONTACT				OG-503040	S5000243		1-	A	B2
J 1004	CONTACT				OG-503040	S5000243		1-	A	B2
L 1001	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	h3
L 1002	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	g3
L 1003	M.RFC	0.1uH			HK1608 R10J-T	L1690528		1-	B	c2
L 1004	COIL				E2 0.28-1.0-4.5T-R	L0022395		1-	B	g3
L 1005	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		1-	B	c3
L 1006	M.RFC	0.82uH			LK1608 R82K-T	L1690417		1-	A	C3
L 1007	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	g3
L 1008	COIL	0.033uH			AS030621-33NK	L0022586		1-	B	c3
L 1009	COIL				E2 0.45-1.5-4.5T-L	L0022601		1-	B	f3
L 1010	M.RFC	0.039uH			HK1608 39NJ-T	L1690523		1-	B	g3
L 1011	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	f3
L 1012	M.RFC	0.082uH		2%	C1608CB-82NG-RF	L1691044		1-	B	g3
L 1013	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		1-	B	c3
L 1014	M.RFC	0.056uH		2%	C1608CB-56NG-RF	L1691041		1-	B	g2
L 1015	M.RFC	0.022uH			HK1608 22NJ-T	L1690520		1-	B	e3
L 1016	M.RFC	0.18uH		2%	C1608CB-R18G-RF	L1691102		1-	B	g2
L 1017	M.RFC	0.068uH		2%	C1608CB-68NG-RF	L1691042		1-	B	e3
L 1018	M.RFC	0.1uH			HK1608 R10J-T	L1690528		1-	B	g2
L 1019	M.RFC	0.047uH			HK1608 47NJ-T	L1690524		1-	B	f2
L 1020	M.RFC	0.068uH			HK1608 68NJ-T	L1690526		1-	B	d3
L 1021	M.RFC	0.039uH		2%	C1608CB-39NG-RF	L1691039		1-	B	f3
L 1022	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		1-	B	c3
L 1023	M.RFC	0.039uH		2%	C1608CB-39NG-RF	L1691039		1-	B	f3
L 1024	M.RFC	0.056uH			HK1608 56NJ-T	L1690525		1-	B	d3
L 1025	M.RFC	0.056uH			HK1608 56NJ-T	L1690525		1-	B	e3
L 1026	M.RFC	1.5uH			LK1608 1R5K-T	L1690846		1-	B	e2
L 1027	M.RFC	1.5uH			LK1608 1R5K-T	L1690846		1-	B	d2
MC1001	MIC. ELEMENT				PF0-1055P	M3290045		1-	A	C1
Q 1001	IC				TAR5S50U(TE85L.F)	G1094097		1-	B	e1
Q 1002	IC				TAR5S33U(TE85L.F)	G1094549		1-	B	e1
Q 1003	TRANSISTOR				DTC144EE TL	G3070075		1-	B	c3
Q 1004	TRANSISTOR				2SC5006-T1	G3350068		1-	B	c3
Q 1005	TRANSISTOR				DTC144EE TL	G3070075		1-	A	B4
Q 1006	TRANSISTOR				2SC5006-T1	G3350068		1-	B	c3
Q 1007	TRANSISTOR				DTC144EE TL	G3070075		1-	B	c3
Q 1008	TRANSISTOR				UMD5N TR	G3070343		1-	B	e2
Q 1009	TRANSISTOR				UMD5N TR	G3070343		1-	B	e2
Q 1010	TRANSISTOR				UMD5N TR	G3070343		1-	B	d3
Q 1011	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	c2
Q 1012	FET				RQA0011DNS	G3070392		1-	B	f3
Q 1013	FET				RQA0004PXDQS	G3070391		1-	B	e3
Q 1014	IC				LM2904PWR	G1094010		1-	A	B3
Q 1015	FET				3SK294(TE85L)	G4802948		1-	B	g2
Q 1016	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	b3
Q 1017	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	b3
Q 1018	TRANSISTOR				2SC5226-5-TL	G3352268E		1-	B	d3
Q 1019	IC				R1EX24008ATAS0I	G1094879		1-	B	d2
Q 1020	TRANSISTOR				DTC144EE TL	G3070075		1-	A	B3
Q 1021	TRANSISTOR				DTC144EE TL	G3070075		1-	B	f2
Q 1022	IC				LV2105V-TLM	G1093191		1-	B	b3
Q 1023	FET				3SK318 TL	G4803188		1-	B	e2
Q 1024	TRANSISTOR				DTC144EE TL	G3070075		1-	B	b2
Q 1025	TRANSISTOR				2SC4915-O(TE85L.F)	G3349158O		1-	B	d2
Q 1026	IC				NJM2591V-TE1	G1094024		1-	B	c1
Q 1027	IC				NJM12902V-TE1	G1093592		1-	B	f1
Q 1028	IC				UPD78F0484GK(S)-GAK-AX	※		1-	A	E1

## Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
Q 1029	TRANSISTOR				DTC144EE TL	G3070075		1-	B	a1
Q 1030	IC				LM2902PWR	G1094009		1-	B	b1
Q 1031	TRANSISTOR				UMD5N TR	G3070343		1-	B	e1
Q 1032	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	h1
Q 1033	IC				TC7S66FU(TE85R.F)	G1092116		1-	A	B1
Q 1034	TRANSISTOR				DTC144EE TL	G3070075		1-	B	h1
Q 1035	IC				TDA2822L-S08-R	G1094497		1-	A	A2
Q 1036	TRANSISTOR				2SB1132 T100 R	G3211327R		1-	B	h2
Q 1037	TRANSISTOR				UMD5N TR	G3070343		1-	B	f1
Q 1038	TRANSISTOR				DTC144EE TL	G3070075		1-	B	f1
Q 1039	TRANSISTOR				2SC4617 TL R	G3346178R		1-	A	A1
R 1001	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	B	h3
R 1002	CHIP RES.	470k	1/16W	1%	RMC1/16SK474FTH	J24189537		1-	A	D1
R 1003	CHIP RES.	150k	1/16W	1%	RMC1/16SK154FTH	J24189531		1-	A	D1
R 1004	CHIP RES.	330k	1/16W	1%	RMC1/16SK334FTH	J24189535		1-	A	D1
R 1005	CHIP RES.	82k	1/16W	1%	RMC1/16SK823FTH	J24189528		1-	A	D2
R 1006	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	B3
R 1007	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	A	D1
R 1008	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	A	C3
R 1009	CHIP RES.	220	1/16W	1%	RMC1/16SK221FTH	J24189508		1-	B	c2
R 1010	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	B3
R 1011	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	B	c2
R 1012	CHIP RES.	220	1/16W	0.5%	RR0510P-221-D	J24189103		1-	B	c2
R 1013	CHIP RES.	680	1/16W	0.5%	RR0510P-681-D	J24189115		1-	B	c3
R 1014	CHIP RES.	4.7k	1/16W	0.5%	RR0510P-472-D	J24189135		1-	B	c3
R 1015	CHIP RES.	220	1/16W	1%	RMC1/16SK221FTH	J24189508		1-	A	C3
R 1016	CHIP RES.	10k	1/16W	0.5%	RR0510P-103-D	J24189143		1-	B	c3
R 1017	CHIP RES.	56k	1/16W	1%	RMC1/16SK563FTH	J24189526		1-	B	c3
R 1018	CHIP RES.	33k	1/16W	1%	RMC1/16SK333FTH	J24189494		1-	B	c3
R 1019	CHIP RES.	220	1/16W	1%	RMC1/16SK221FTH	J24189508		1-	B	f3
R 1020	CHIP RES.	330	1/16W	1%	RMC1/16SK331FTH	J24189510		1-	A	E4
R 1021	CHIP RES.	100	1/16W	1%	RMC1/16SK101FTH	J24189504		1-	B	e3
R 1022	CHIP RES.	15k	1/16W	1%	RMC1/16SK153FTH	J24189491		1-	B	c3
R 1023	CHIP RES.	120	1/16W	1%	RMC1/16SK121FTH	J24189505		1-	A	D4
R 1024	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	c2
R 1025	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	e3
R 1026	CHIP RES.	2.7k	1/16W	1%	RMC1/16SK272FTH	J24189517		1-	B	e3
R 1027	CHIP RES.	560	1/16W	1%	RMC1/16SK561FTH	J24189513		1-	B	b1
R 1028	CHIP RES.	560	1/16W	1%	RMC1/16SK561FTH	J24189513		1-	B	a2
R 1029	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	A	B4
R 1030	CHIP RES.	330	1/16W	1%	RMC1/16SK331FTH	J24189510		1-	B	b3
R 1031	CHIP RES.	220k	1/16W	1%	RMC1/16SK224FTH	J24189533		1-	B	g3
R 1032	CHIP RES.	330k	1/16W	1%	RMC1/16SK334FTH	J24189535		1-	B	g3
R 1033	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	e4
R 1034	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	B3
R 1035	CHIP RES.	470	1/16W	1%	RMC1/16SK471FTH	J24189512		1-	B	b3
R 1036	CHIP RES.	330	1/16W	1%	RMC1/16SK331FTH	J24189510		1-	B	e3
R 1037	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	e4
R 1038	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	A	B3
R 1039	CHIP RES.	180	1/16W	1%	RMC1/16SK181FTH	J24189507		1-	B	b3
R 1040	CHIP RES.	82k	1/16W	1%	RMC1/16SK823FTH	J24189528		1-	B	g2
R 1041	CHIP RES.	470k	1/16W	1%	RMC1/16SK474FTH	J24189537		1-	B	g2
R 1042	CHIP RES.	100	1/16W	1%	RMC1/16SK101FTH	J24189504		1-	B	e3
R 1043	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	B3
R 1044	CHIP RES.	100	1/16W	1%	RMC1/16SK101FTH	J24189504		1-	B	g2
R 1045	CHIP RES.	39k	1/16W	1%	RMC1/16SK393FTH	J24189524		1-	A	B3
R 1046	CHIP RES.	100	1/16W	1%	RMC1/16SK101FTH	J24189504		1-	B	b3
R 1047	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	g2
R 1048	CHIP RES.	150	1/16W	1%	RMC1/16SK151FTH	J24189506		1-	B	g3
R 1049	CHIP RES.	220	1/16W	1%	RMC1/16SK221FTH	J24189508		1-	B	b3
R 1050	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	A	B3
R 1051	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	B	b3
R 1052	CHIP RES.	330	1/16W	1%	RMC1/16SK331FTH	J24189510		1-	B	d3
R 1053	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	B	b3
R 1054	CHIP RES.	100	1/16W	1%	RMC1/16SK101FTH	J24189504		1-	B	d3
R 1055	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	B	b3
R 1056	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	B	b3
R 1057	CHIP RES.	6.8k	1/16W	1%	RMC1/16SK682FTH	J24189521		1-	B	d3
R 1058	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	d3
R 1059	CHIP RES.	1.8k	1/16W	1%	RMC1/16SK182FTH	J24189516		1-	A	B3
R 1060	CHIP RES.	33k	1/16W	1%	RMC1/16SK333FTH	J24189494		1-	B	a2
R 1061	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	A	B3
R 1062	CHIP RES.	220	1/16W	1%	RMC1/16SK221FTH	J24189508		1-	B	d3

# MAIN Unit

## Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1063	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	d2
R 1064	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	d1
R 1065	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	B	a2
R 1066	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	f2
R 1067	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	B	a2
R 1068	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	f2
R 1069	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	f2
R 1070	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	d3
R 1074	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	b2
R 1075	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	d3
R 1076	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	d3
R 1077	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	B	a3
R 1078	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	B	a3
R 1079	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	B	a3
R 1080	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	B	f2
R 1081	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	B	f2
R 1082	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	B	f2
R 1083	CHIP RES.	120k	1/16W	1%	RMC1/16SK124FTH	J24189530		1-	B	f2
R 1084	CHIP RES.	47	1/16W	0.5%	MCR01MZPD47R0	J24189346		1-	B	e2
R 1085	CHIP RES.	220	1/16W	1%	RMC1/16SK221FTH	J24189508		1-	B	e3
R 1086	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	b3
R 1087	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	B	e2
R 1088	CHIP RES.	820	1/16W	1%	RMC1/16SK821FTH	J24189495		1-	B	e2
R 1089	CHIP RES.	820	1/16W	1%	RMC1/16SK821FTH	J24189495		1-	B	d2
R 1090	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	B	d2
R 1091	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	E2
R 1092	CHIP RES.	1.2k	1/16W	1%	RMC1/16SK122FTH	J24189515		1-	B	d2
R 1093	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	d2
R 1094	CHIP RES.	220k	1/16W	1%	RMC1/16SK224FTH	J24189533		1-	B	b1
R 1095	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	b1
R 1096	CHIP RES.	470k	1/16W	1%	RMC1/16SK474FTH	J24189537		1-	B	f2
R 1097	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	E1
R 1098	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	E1
R 1099	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	E1
R 1100	CHIP RES.	39k	1/16W	1%	RMC1/16SK393FTH	J24189524		1-	B	g1
R 1101	CHIP RES.	39k	1/16W	1%	RMC1/16SK393FTH	J24189524		1-	B	f2
R 1102	CHIP RES.	8.2k	1/16W	1%	RMC1/16SK822FTH	J24189522		1-	B	f2
R 1103	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	c1
R 1104	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	f2
R 1105	CHIP RES.	150k	1/16W	1%	RMC1/16SK154FTH	J24189531		1-	B	c2
R 1106	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	f2
R 1108	CHIP RES.	330k	1/16W	1%	RMC1/16SK334FTH	J24189535		1-	B	f1
R 1109	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	B	c1
R 1110	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	c1
R 1111	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	D1
R 1112	CHIP RES.	220k	1/16W	1%	RMC1/16SK224FTH	J24189533		1-	A	E1
R 1113	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	A	E1
R 1114	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	E1
R 1115	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	A	E1
R 1116	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	E1
R 1117	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	A	E1
R 1118	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	c1
R 1120	CHIP RES.	470k	1/16W	1%	RMC1/16SK474FTH	J24189537		1-	B	f2
R 1121	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	A	E1
R 1122	CHIP RES.	120k	1/16W	1%	RMC1/16SK124FTH	J24189530		1-	B	f1
R 1123	CHIP RES.	68k	1/16W	1%	RMC1/16SK683FTH	J24189527		1-	B	g1
R 1124	CHIP RES.	470k	1/16W	1%	RMC1/16SK474FTH	J24189537		1-	B	f1
R 1125	CHIP RES.	15k	1/16W	1%	RMC1/16SK153FTH	J24189491		1-	B	b1
R 1126	CHIP RES.	15k	1/16W	1%	RMC1/16SK153FTH	J24189491		1-	B	f1
R 1127	CHIP RES.	33k	1/16W	1%	RMC1/16SK333FTH	J24189494		1-	B	g1
R 1128	CHIP RES.	1.8k	1/16W	1%	RMC1/16SK182FTH	J24189516		1-	A	E1
R 1129	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	E1
R 1130	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	E1
R 1131	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	d1
R 1132	CHIP RES.	33k	1/16W	1%	RMC1/16SK333FTH	J24189494		1-	B	b1
R 1133	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	f1
R 1134	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	E1
R 1135	CHIP RES.	330k	1/16W	1%	RMC1/16SK334FTH	J24189535		1-	B	f1
R 1136	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	b1
R 1137	CHIP RES.	1M	1/16W	1%	RMC1/16SK105FTH	J24189541		1-	B	e1
R 1138	CHIP RES.	100	1/16W	1%	RMC1/16SK101FTH	J24189504		1-	B	e1
R 1139	CHIP RES.	180k	1/16W	1%	RMC1/16SK184FTH	J24189532		1-	B	b1
R 1140	CHIP RES.	470k	1/16W	1%	RMC1/16SK474FTH	J24189537		1-	B	f2

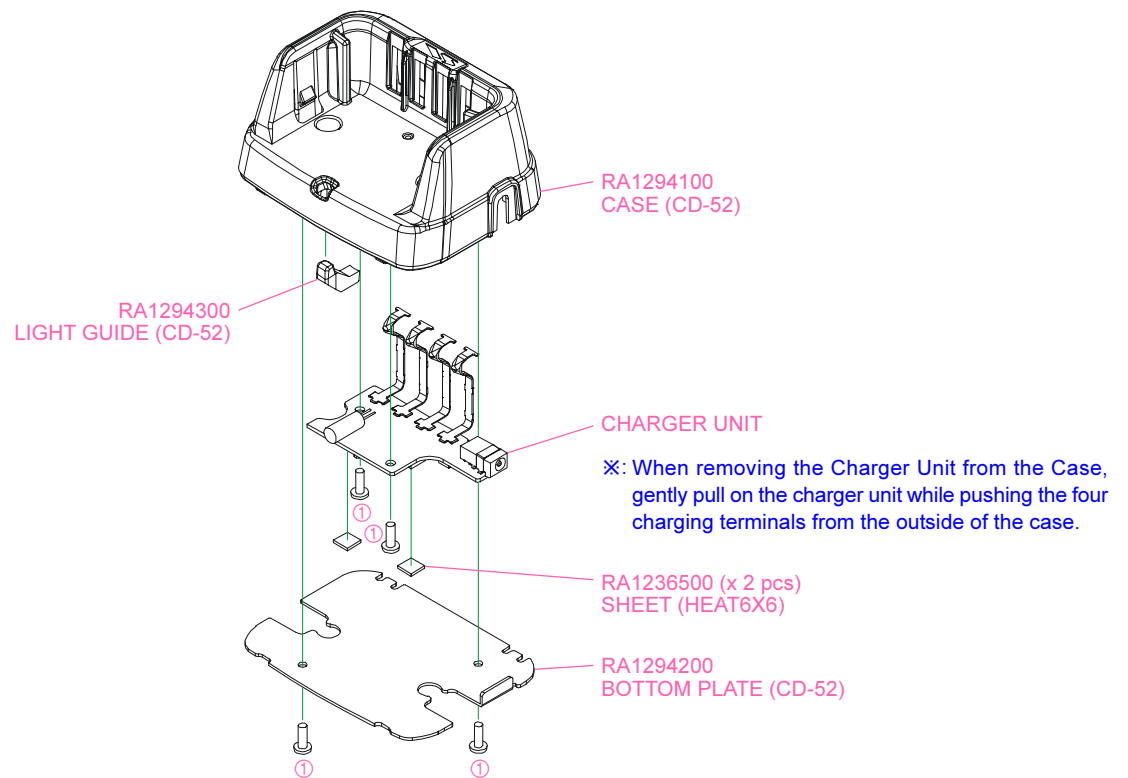
REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1141	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	b1
R 1142	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	B	f1
R 1143	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	f1
R 1144	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	B1
R 1145	CHIP RES.	8.2k	1/16W	1%	RMC1/16SK822FTH	J24189522		1-	B	a1
R 1146	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	B1
R 1147	CHIP RES.	56k	1/16W	1%	RMC1/16SK563FTH	J24189526		1-	B	a2
R 1148	CHIP RES.	1.5k	1/16W	1%	RMC1/16SK152FTH	J24189496		1-	B	a1
R 1149	CHIP RES.	150k	1/16W	1%	RMC1/16SK154FTH	J24189531		1-	B	b1
R 1150	CHIP RES.	180k	1/16W	1%	RMC1/16SK184FTH	J24189532		1-	B	a2
R 1152	CHIP RES.	22k	1/16W	1%	RMC1/16SK223FTH	J24189492		1-	B	a1
R 1153	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	b2
R 1154	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	b1
R 1155	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	b2
R 1157	CHIP RES.	27k	1/16W	1%	RMC1/16SK273FTH	J24189493		1-	B	h1
R 1158	CHIP RES.	47k	1/16W	1%	RMC1/16SK473FTH	J24189525		1-	A	B1
R 1159	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	f1
R 1160	CHIP RES.	2.2k	1/16W	1%	RMC1/16SK222FTH	J24189497		1-	B	f1
R 1161	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	A	A1
R 1162	CHIP RES.	10k	1/16W	1%	RMC1/16SK103FTH	J24189489		1-	B	b2
R 1163	CHIP RES.	2.2	1/4W	5%	RMC1/4 2R2JATP	J24245229		1-	B	h1
R 1164	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	b2
R 1165	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	B	h1
R 1166	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	B	h1
R 1167	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	A	A2
R 1168	CHIP RES.	1k	1/16W	1%	RMC1/16SK102FTH	J24189487		1-	A	A2
R 1169	CHIP RES.	4.7	1/16W	5%	RMC1/16S 4R7JTH	J24189066		1-	A	A2
R 1170	CHIP RES.	4.7	1/16W	5%	RMC1/16S 4R7JTH	J24189066		1-	A	A2
R 1172	CHIP RES.	3.9k	1/16W	1%	RMC1/16SK392FTH	J24189519		1-	B	f1
R 1173	CHIP RES.	100k	1/16W	1%	RMC1/16SK104FTH	J24189529		1-	A	A1
R 1174	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	d1
R 1175	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	d1
R 1176	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	A	F3
R 1178	CHIP RES.	4.7k	1/16W	1%	RMC1/16SK472FTH	J24189488		1-	B	b3
R 1179	CHIP RES.	1.2k	1/16W	1%	RMC1/16SK122FTH	J24189515		1-	A	C4
R 1180	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	f1
S 1009	TACT SWITCH				EVQPUB02K	N5090167		1-	B	f4
TH1001	THERMISTOR				NCP15WL473J03RC	G9090175		1-	A	C3
TH1002	THERMISTOR				NCP15WL473J03RC	G9090175		1-	B	a2
TH1003	THERMISTOR				NCP15WL473J03RC	G9090175		1-	B	b1
VR1001	POT.	10k			PVZ3A103A01R00	J51820103		1-	A	B3
VR1002	POT.	10k			PVZ3A103A01R00	J51820103		1-	A	F2
VR1003	POT.	10k			PVZ3A103A01R00	J51820103		1-	A	B4
VR1004	POT.	10k			PVZ3A103A01R00	J51820103		1-	A	F3
VR1005	POT.	10k			PVZ3A103A01R00	J51820103		1-	A	F1
VR1006	POT.				TP76N00N RY-8935	J60800307		1-	B	h1
X 1001	XTAL NX6035SA	21.25MHz			21.25MHZ	H0103391		1-	B	b2
X 1002	XTAL SMD-49TA	9.8304MHz			9.8304MHZ	H0103393		1-	B	d1
XF1001	XTAL FILTER				21.700MHZ	H1102395		1-	B	e2
XF1002	XTAL FILTER				21.700MHZ	H1102395		1-	B	d2
	INTER CONNECTOR				(LCD)	RA1081000		1-		
	LIGHT GUIDE				(LCD)	RA107890A		1-		
	REFLECTOR SHEET				(HX290)	RA1089600		1-		
	MIC HOLDER RUBBER					RA1312800		1-		

*MAIN Unit*

*Note*

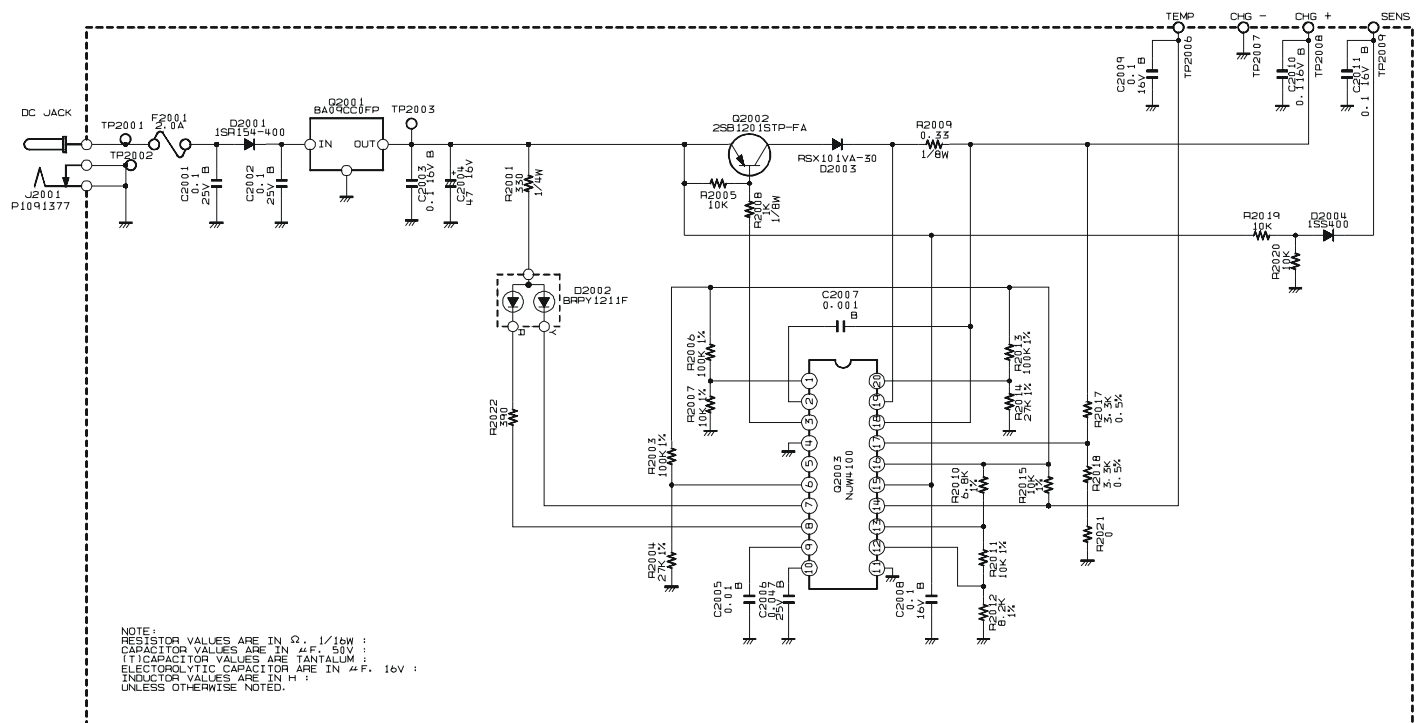


### Exploded View

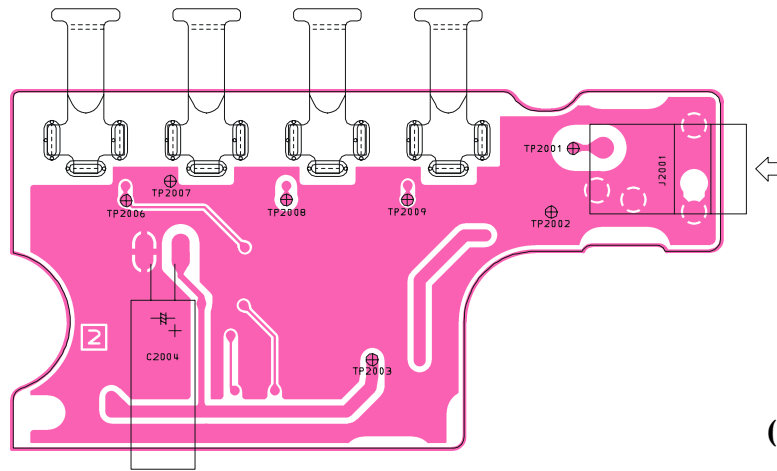


Ref.	VXSTD P/N	Description	Qty.
①	U24208020	BIND HEAD TAPTITE-P 2.6X8SUS	4

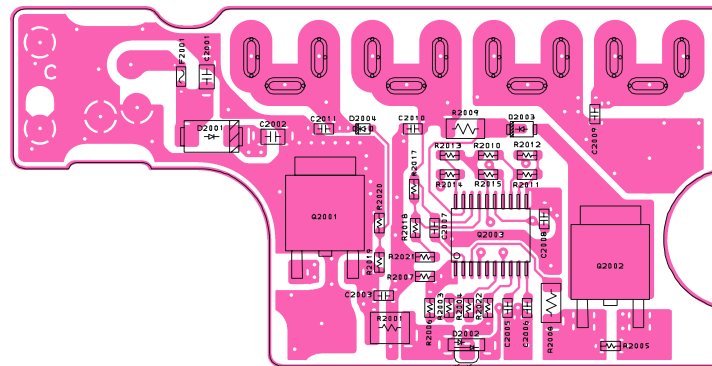
### Circuit Diagram



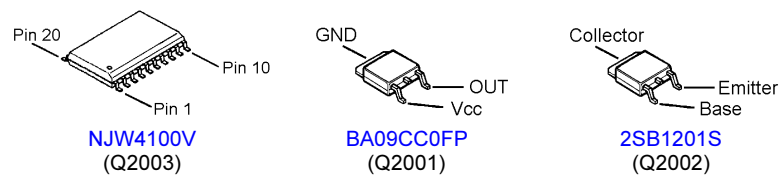
## Parts Layout



**(Side A)**



**(Side B)**



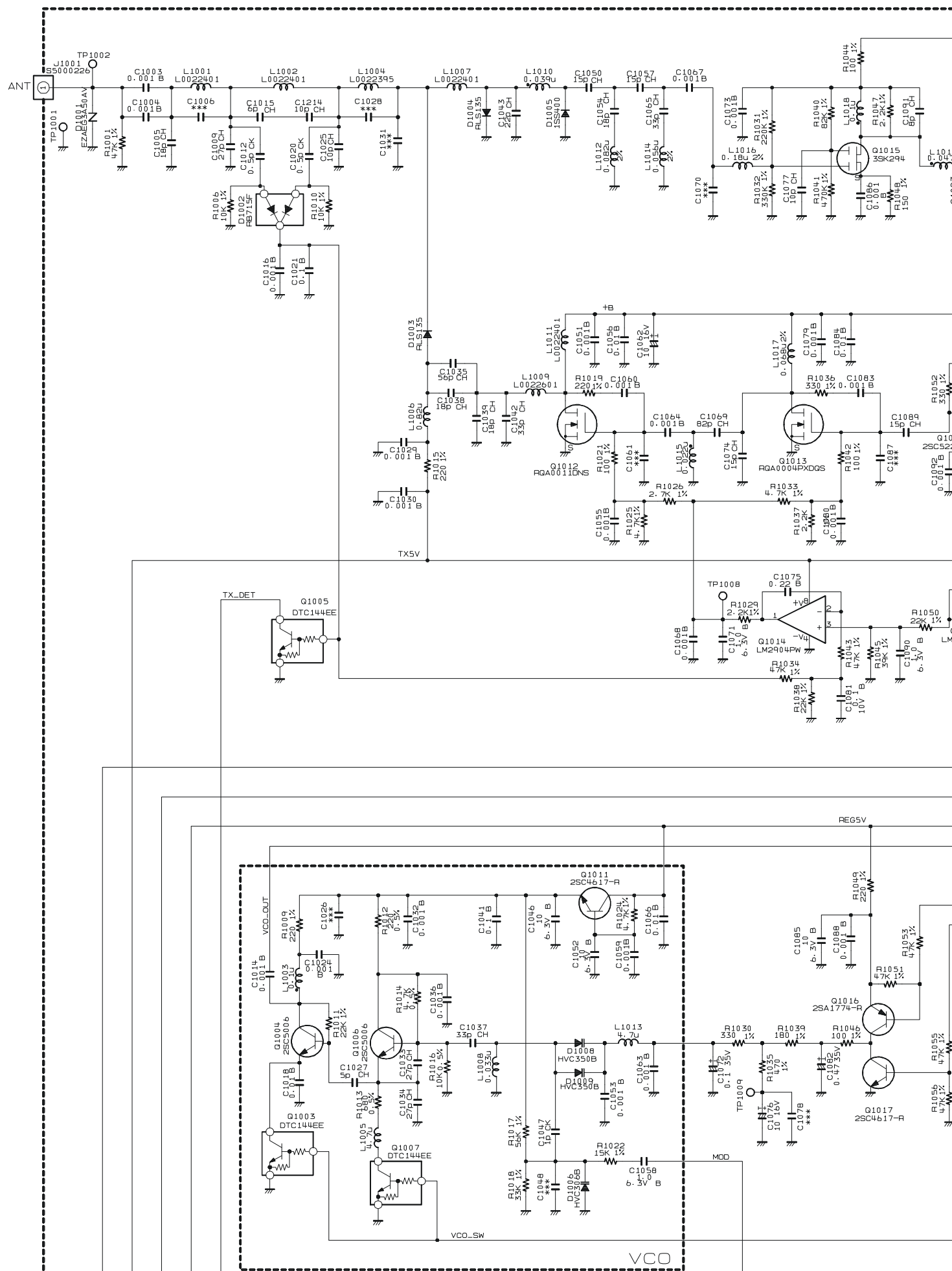
# CD-52 Charger Cradle

## Parts List

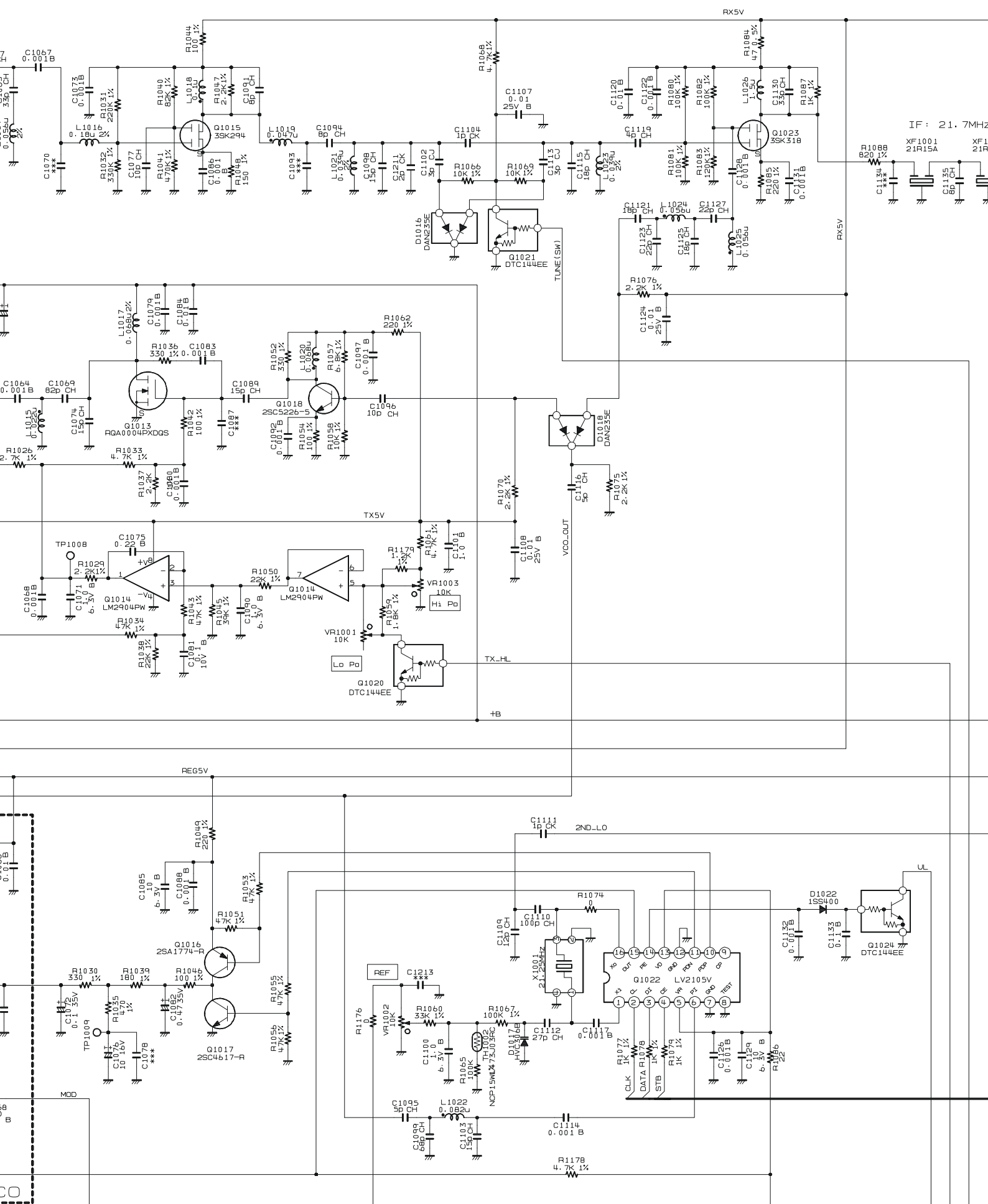
REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	Printed Circuit Board				AM045N000	FR0222400		1-		
C 2001	CHIP CAP.	0.1uF	25V	B	GRM21BB11E104KA01L	K22140811		1-		
C 2002	CHIP CAP.	0.1uF	25V	B	GRM21BB11E104KA01L	K22140811		1-		
C 2003	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 2004	AL.ELECTRO.CAP.	47uF	16V		UVR1C470MDD	K40129107		1-		
C 2005	CHIP CAP.	0.01uF	50V	B	GRM188B11H103KA01D	K22174823		1-		
C 2006	CHIP CAP.	0.047uF	25V	B	GRM188B11E473KA01D	K22144811		1-		
C 2007	CHIP CAP.	0.001uF	50V	B	GRM188B11H102KA01D	K22174821		1-		
C 2008	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 2009	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 2010	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 2011	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
D 2001	DIODE				1SR154-400 TE25	G2070684		1-		
D 2002	LED				BRPY1211F-TR	G2070706		1-		
D 2003	DIODE				RSX101VA-30TR	G2070984		1-		
D 2004	DIODE				1SS400 TE61	G2070634		1-		
F 2001	CHIP FUSE	2A			FCC16 202ADTP	Q0000147		1-		
J 2001	CONNECTOR				MJC-005-B-B-2	P1091377		1-		
Q 2001	IC				BA09CC0FP(TAPE)	G1094432		1-		
Q 2002	TRANSISTOR				2SB1201S-TL	G3070195		1-		
Q 2003	IC				NJW4100V(Te1)	G1094305		1-		
R 2001	CHIP RES.	330	1/4W	5%	RMC1/4 331JATP	J24245331		1-		
R 2003	CHIP RES.	100k	1/16W	1%	RMC1/16 104FTP	J24183104		1-		
R 2004	CHIP RES.	27k	1/16W	1%	RMC1/16 273FTP	J24183273		1-		
R 2005	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 2006	CHIP RES.	100k	1/16W	1%	RMC1/16 104FTP	J24183104		1-		
R 2007	CHIP RES.	10k	1/16W	1%	RMC1/16 103FTP	J24183103		1-		
R 2008	CHIP RES.	1k	1/8W	5%	RMC1/8T 102J	J24215102		1-		
R 2009	CHIP RES.	0.33	1/8W	10%	RMC1/8 R33KTP	J24219001		1-		
R 2010	CHIP RES.	6.8k	1/16W	1%	RMC1/16 682FTP	J24183682		1-		
R 2011	CHIP RES.	10k	1/16W	1%	RMC1/16 103FTP	J24183103		1-		
R 2012	CHIP RES.	8.2k	1/16W	1%	RMC1/16 822FTP	J24183822		1-		
R 2013	CHIP RES.	100k	1/16W	1%	RMC1/16 104FTP	J24183104		1-		
R 2014	CHIP RES.	27k	1/16W	1%	RMC1/16 273FTP	J24183273		1-		
R 2015	CHIP RES.	10k	1/16W	1%	RMC1/16 103FTP	J24183103		1-		
R 2017	CHIP RES.	3.3k	1/16W	0.5%	RGC1/16C332DTP	J24189415		1-		
R 2018	CHIP RES.	3.3k	1/16W	0.5%	RGC1/16C332DTP	J24189415		1-		
R 2019	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 2020	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 2021	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-		
R 2022	CHIP RES.	390	1/16W	5%	RMC1/16 391JATP	J24185391		1-		
	TERMINAL				(CHRG)	RA0769800		1-		

*Note*

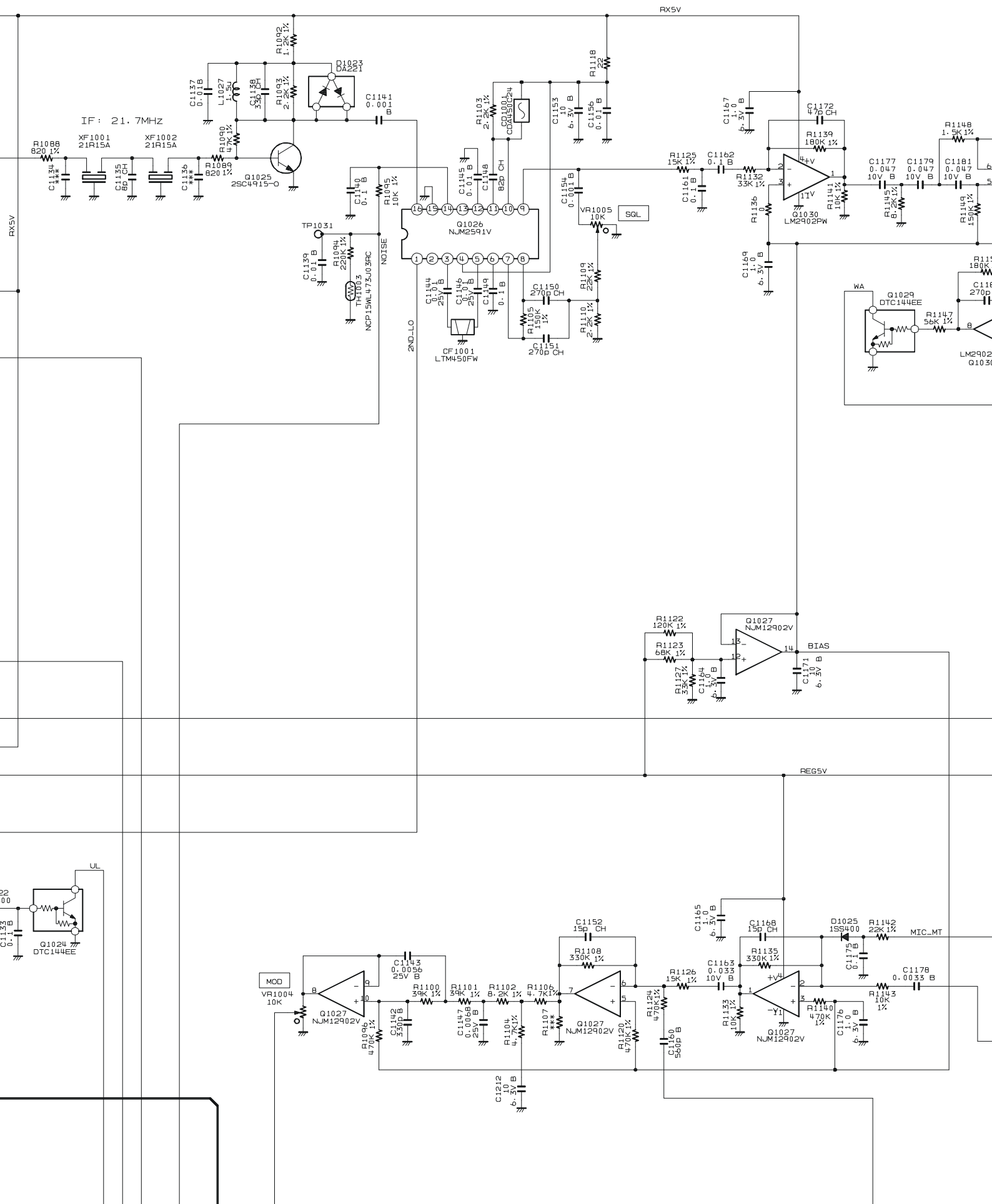
1	2	3	4
5	6	7	8



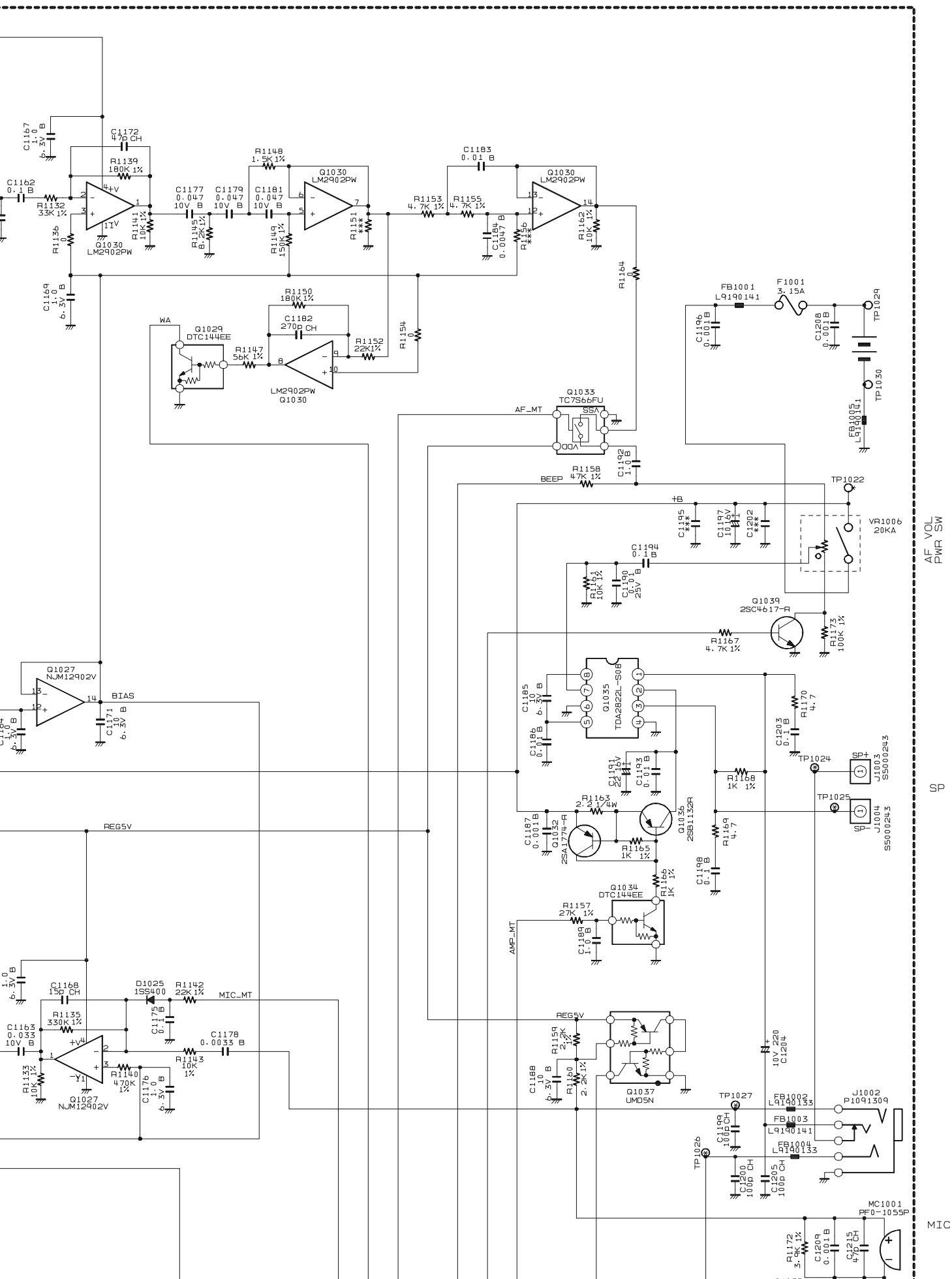
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5	6	7	8



1	2	3	4
5	6	7	8



1	2	3	4
5	6	7	8



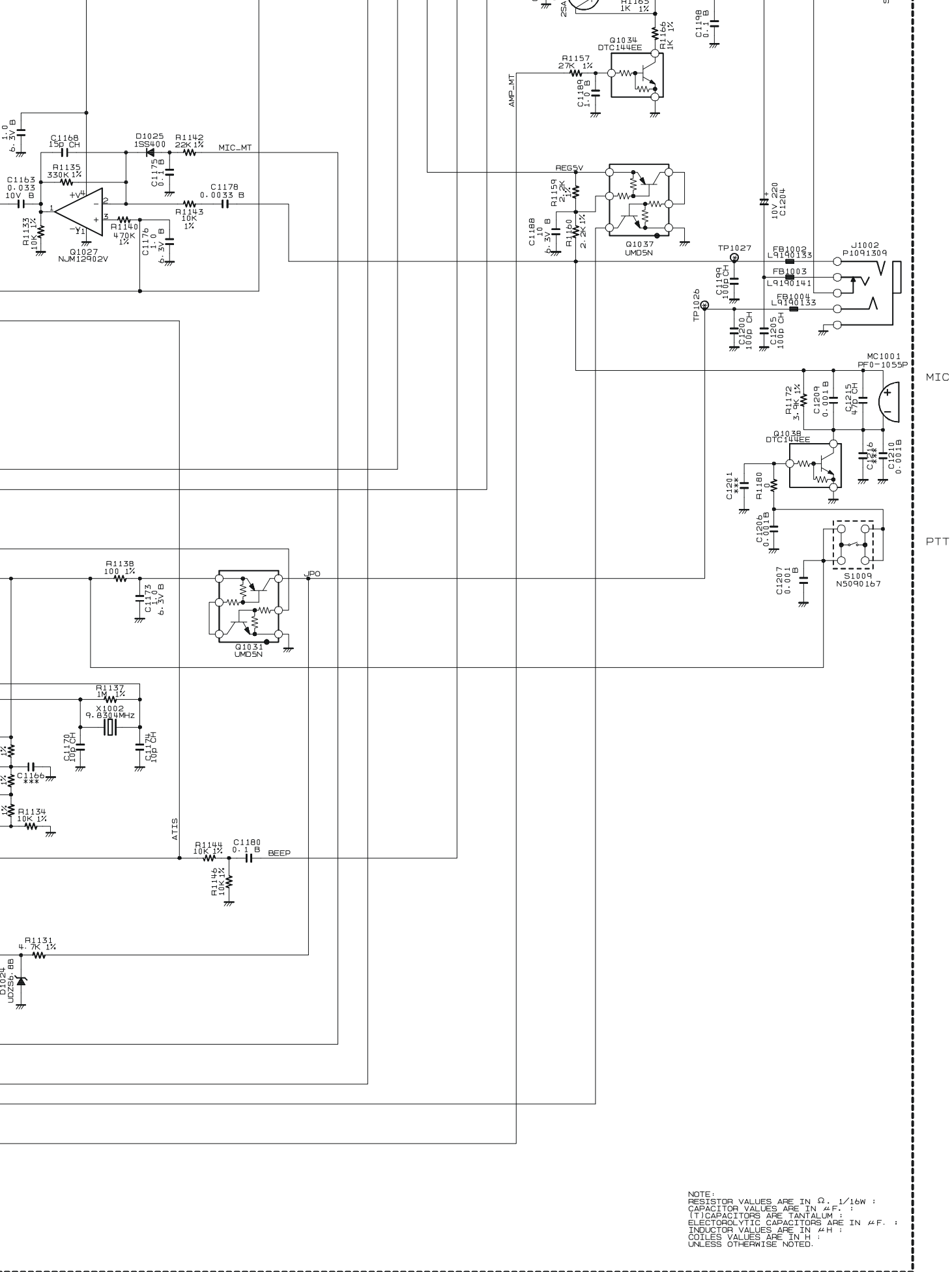




1	2	3	4
5	6	7	8



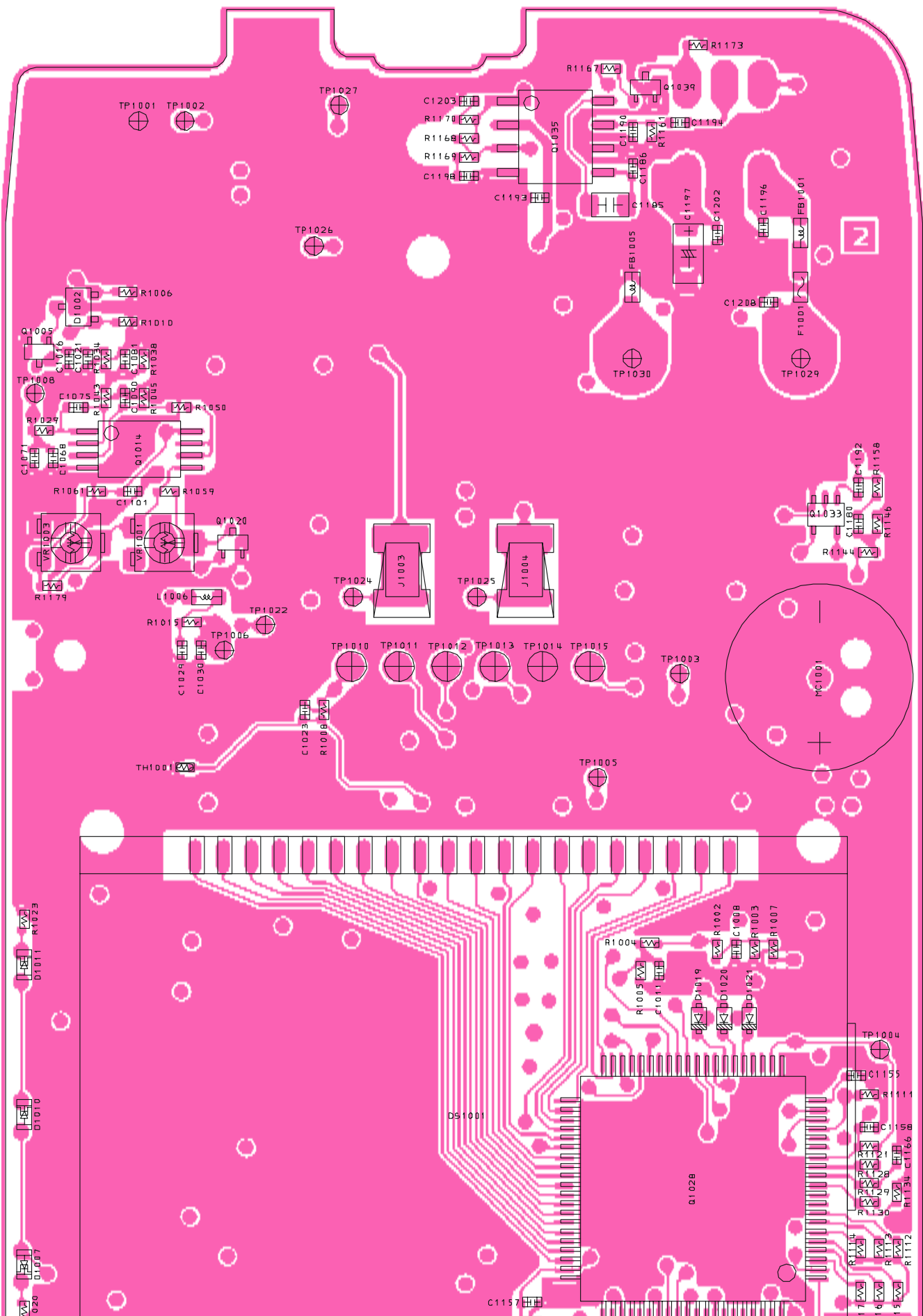




**HX290 Main Unit  
Circuit Diagram**

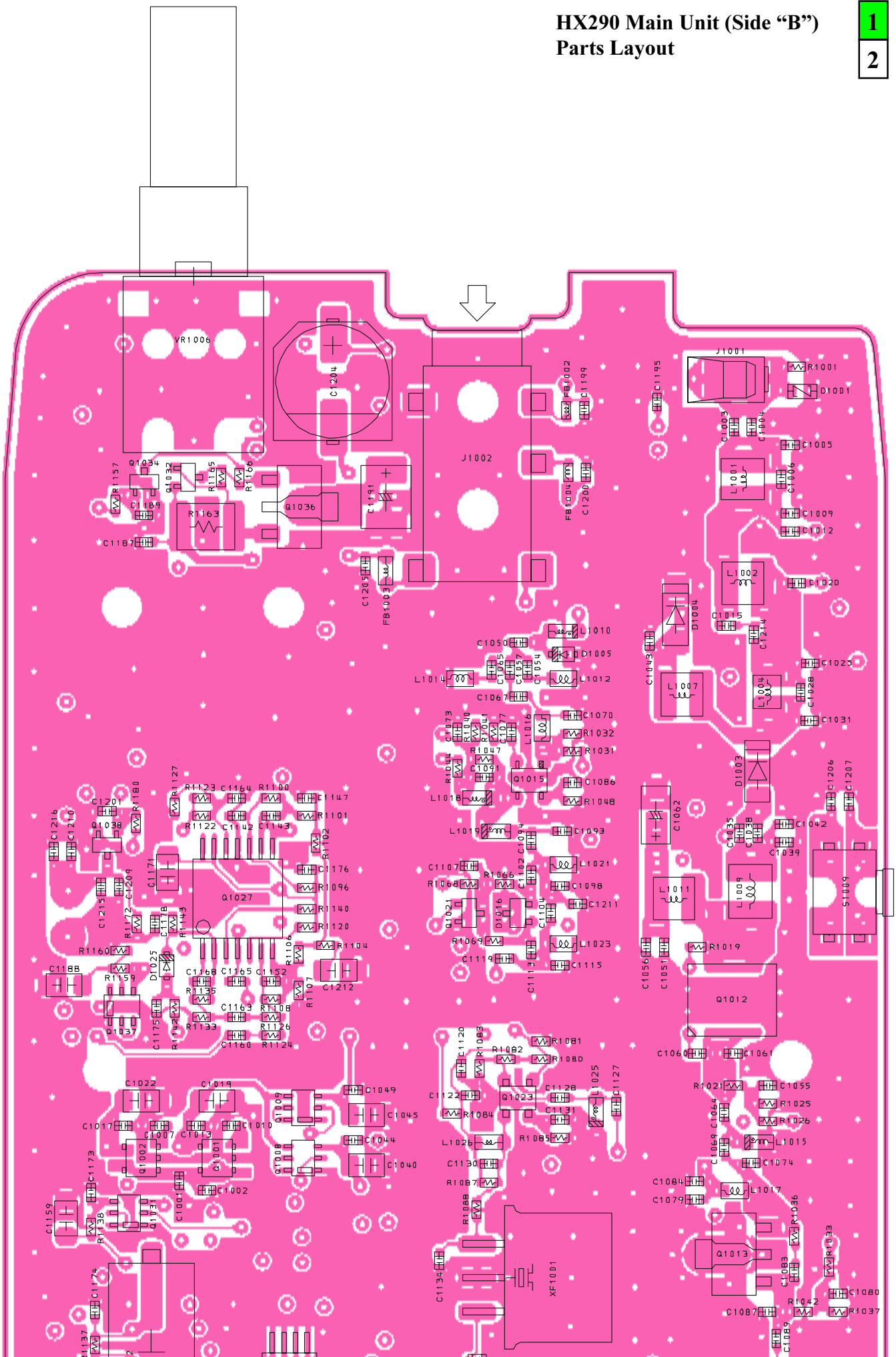
1	2	3	4
5	6	7	8

## 2





## 2





1

2







**STANDARD HORIZON**

**Marine Division of VERTEX STANDARD**

**US Headquarters**

10900 Walker Street, Cypress, CA 90630, U.S.A.

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